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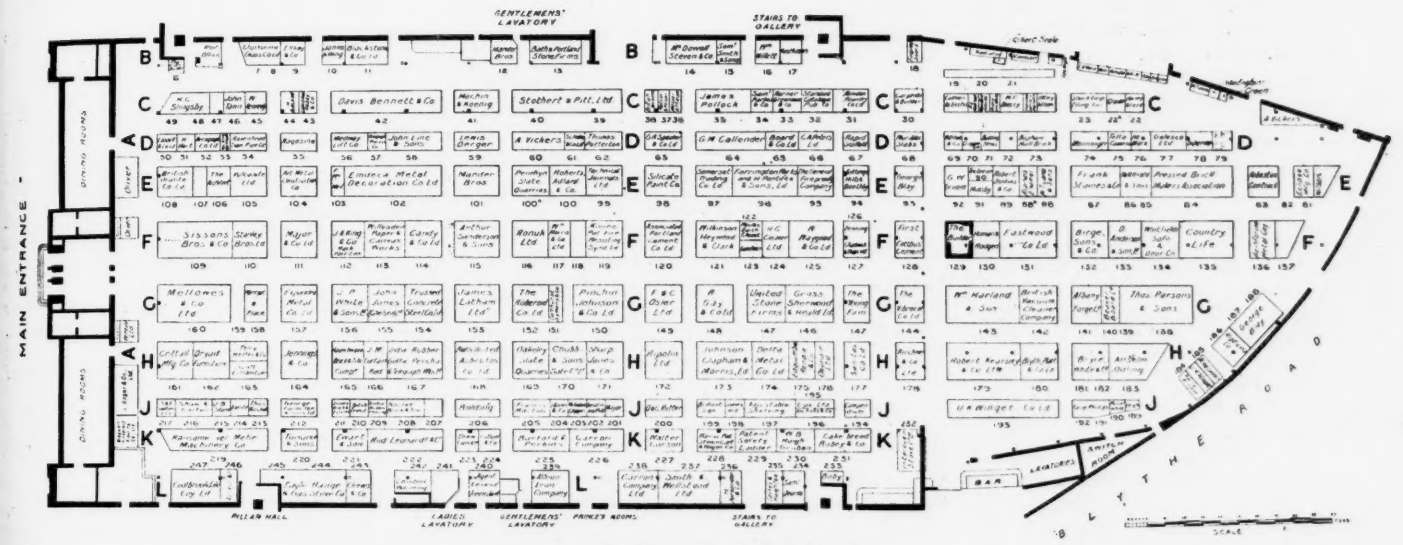
Supplement to The Builder,

APRIL 11, 1913.

The Building Trades Exhibition, Olympia,

ADDISON ROAD, W.



Plan of Building Trades Exhibition.

EXHIBITIONS AND BUILDING TRADES EXHIBITIONS.

IT is said there is nothing new under the sun, and this applies to exhibitions as to other manifestations of human industry. The first recorded exhibition was that held, as we are told in the Book of Esther, by King Ahasuerus in the third year of his reign, to show "the riches of his glorious kingdom and the honour of his excellent majesty," its duration being stated at "many days, even an hundred and fourscore days." At Venice, during the dogeship of Lorenzo Tiepoli, in 1268, an exhibition was held, features of which were a water *fête* and a procession of the various trades guilds, which marched through the narrow streets to the great square of St. Mark's. Mediæval exhibitions or fairs were also held at Nijni-Novgorod, in Russia; Leipzig, in Germany, which has been chosen this year for an International Building Trades Exhibition; and Leyden, in Holland.

The Society of Arts in this country promoted an exhibition in 1756; there was one connected with the French Art Factories in 1797; while in 1801, under the auspices of the French Empire, a second official exhibition was held in the Grand Court of the Louvre. In the report of the latter it is stated that "there is not an artist or inventor who, once obtaining public recognition of his ability, has not found his reputation and business largely increased."

In 1844 an exhibition was held at Berlin, and in 1845 a Free Trade Bazaar of British Manufactures at Covent Garden Theatre, which was soon after followed by the first International Exhibition of 1851, promoted by the Society of Arts, of which the late Prince Consort was President.

An exhibition was held at Paris in the latter days of the Second Empire in 1867, while 1876 saw the Centennial Exhibition in America. In Paris exhibitions were held in 1878 and 1900, the latter visited by 65,000,000 people, while the exhibition of 1851 attracted a little more than 6,000,000. The French Government subsidised the exhibition of 1900 by a grant of over £800,000, and the predominance of home exhibits was maintained by alotting a full half of the available space to them. In 1907 exhibitions were held at both Glasgow and Buffalo, and 1893 saw the World's Fair at Chicago.

While the earlier exhibitions of last century may be termed utilitarian in essence, simply aiming at providing a certain amount of space for the display of goods, those held of recent years have combined with this object an attempt to show the æsthetic possibilities open to the designer in the arrangement of great groups of temporary buildings. The most notable of these have been the World's Fair at Chicago and the Paris Exhibition of 1900.

In the World's Fair the site chosen was a park bordering on Lake Michigan, with water basins, which were planned into the general scheme. The various designs for the exhibition buildings were the work of the foremost architects in America, and were for the most part examples of monumental design. In effect the exhibition served the purpose of showing the possibilities of architectural design and was a fine object-lesson of architectural laying-out. Instead of the various buildings being carried out in glass and iron, they were constructed of materials giving them the dignity and outward appearance of a more architectural medium.

The area of the Paris Exhibition of 1900 comprised the whole of the Champ de Mars, the Trocadéro and surrounding gardens, the Quai d'Orsay, the Esplanade des Invalides, the Cours la Reine, and a large portion of the Champs Elysées. Two of the principal exhibition buildings, the Grand Palais and the Petit Palais, are rightly considered to have had a great effect on contemporary French design. The Petit Palais became at the conclusion of the exhibition a State museum, the municipality having given a large sum, as already mentioned, towards the expense of the exhibition on this understanding. The Grand Palais was built from the designs of three architects—MM. Thomas, Deglane, and Louvet. In both buildings sculpture was freely employed, and the cost of the two buildings was practically £1,000,000. The Pont Alexandre III. connected parts of the exhibition on two banks, and formed part of the general scheme, the Pont d'Jena occupying a similar position between the severed portions of the exhibition; while the banks of the Seine between the two bridges were lined with exhibition buildings, giving lateral connection between the two main sites on which the bulk of the exhibition was laid out.

The whole conception and lay-out of the Paris Exhibition was an unusually fine one; the individual buildings, on the other hand, were for the most part less architectural in character and conception than the simpler and more dignified buildings in the World's Fair.

Since the date of these two exhibitions every large scheme of the kind has been the subject of an attempt to introduce architectural grouping and to suggest permanence by the careful choice of the materials of which the buildings were erected.

Such were some of the chief exhibitions of the past, but in these latter days we may be said to have reached a stage in the history of the world in which exhibitions have

become epidemic, and we can hardly read a paper without seeing an announcement of some new exhibition or other.

In most affairs of life there is truth in the adage that "we can have too much of a good thing," and we think this reflection may have its bearing on exhibitions. Originally intended to enable manufacturers to introduce their wares to an ignorant public, they have, in these days of trade journalism and rapid communication, lost much of their original meaning.

The network formed by agencies, papers, advertisements, and commercial travellers has rendered it easy for firms to bring their goods to the notice of those who may wish to see them, and an exhibition *per se* is hardly one of the places of amusement most of us would prefer. The constant necessity for trading firms to spend money in erecting stands and other incidental charges connected with an exhibition constitutes a heavy tax on their capital, apart from the labour and trouble involved, and what is done by one trader is made a necessity for his rival. But we recognise that in the building trades each year produces so much that is novel in the way of materials or methods that a Building Trades Exhibition may be of great use and interest to those who follow the manifold industries connected with building, and the present exhibition is one of great value in this connection.

We are not sure whether something might not be done to lessen cost and labour to exhibitors by providing a general treatment of the stall space in which each exhibitor's goods might be displayed. Some such system might partially destroy the full ability of each firm to advertise their goods by individual and dissimilar structures, but it would give a unity to the appearance of the whole which would not be without its advantages. We make this as a general suggestion which, in these days of annual exhibitions, might be worthy of a little consideration, because it would save both labour and expense.

We shall, in this and our next issue, give a full account of the various exhibits, and we wish the promoters of the Building Trades Exhibition of 1913 the success which their enterprise deserves.

OFFICIAL VISITS.

The following visits will be made to the exhibition :—

Saturday, April 12, 12 (noon).—The Rt. Hon. the Lord Mayor of London (Sir David Burnett), accompanied by the Sheriffs, opens the exhibition in state; 2.30 p.m., visit of the Architectural Association; 3.30 p.m., visit of the Institution of Municipal Engineers.

Monday, April 14, 2.30 p.m.—Institute of Sanitary Engineers.

Tuesday, April 15, 2.30 p.m.—Visit of the Land Agents' Society; 6 p.m., National Federation of Building Trades Employers.

Wednesday, April 16, 2.30 p.m.—Visit of the Institute of Builders; 2.30 p.m., visit of the Institution of Heating and Ventilating Engineers.

Thursday, April 17, 2.30 p.m.—Visit of the District Surveyors' Association.

Friday, April 18, 3 p.m.—Annual meeting of the Institute of Clayworkers.

Saturday, April 19, 2.30 p.m.—Visit of the Royal Sanitary Institute; 3.30 p.m., conference of Municipal Engineers.

Monday, April 21, 3 p.m.—Visit of the Society of Architects.

Tuesday, April 22, 2.30 p.m.—Visit of the Surveyors' Institution.

Thursday, April 24, 3 p.m.—Visit of the Concrete Institute.

The following are among the exhibitors. Next week we shall give a review of the exhibition and further notices :—

The Associated Portland Cement Manufacturers (1900), Ltd.

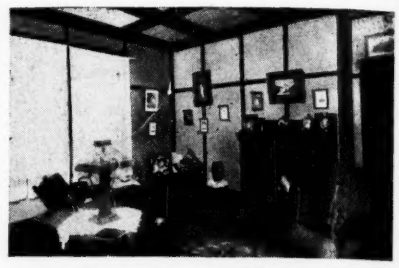
Stand 120, Row F.

The Associated Portland Cement Manufacturers (1900), Ltd., Portland House, Lloyds-avenue, Fenchurch-street, London, E.C., exhibit at their stand, No. 120, Row F, samples of the company's well-known brands of Portland cement, including "J. B. White & Bros.," "Hilton, Anderson, & Co.," Francis "Nine Elms," "K.B.S.," "Pyramid," "Anchor," "Burham," "London Portland," "Gillingham," "Gibbs," "Diamond," "Eddystone," "Tingeys," "Vectis," "Robins," and their special "Ferrocrete" brand for reinforced concrete construction. Cement at various stages of its manufacture can be seen—Samples of cement ground to various degrees of fineness; neat sand briquettes of various ages for testing tensile strain; cubes of various ages and mixtures for testing crushing strain; aggregates of various descriptions, both suitable and unsuitable for mixing with Portland cement; complete testing apparatus in conformity with the requirements of the revised British Standard Specification (practical tests are carried out at the stand); hydraulic crushing machine for cubes of 50 sq. c.m. area reading up to 50 tons made at the company's engineering shops from their own design; and samples of plaster of Paris, Keene's, Parian, and Roman cements.

The Beaver Board Company, Ltd.

Stand 140, Row G.

The Beaver Board Company, Ltd., show at Stand 140, Row G, their Beaver Board panelled walls and ceilings. The Beaver Board is comparatively a new material in the United Kingdom, and one which since its introduction has been meeting with much success. A specimen room, the walls and ceiling of which are entirely finished with Beaver Board, is shown, which gives a good idea of the decorative effects and also the practical fixing of Beaver Board. Beaver



Specimen Room showing Walls and Ceilings finished with Beaver Board.

Board is a pure wood fibre wallboard taking the place of lath, plaster, wallpaper, or other materials used for constructing walls and ceilings in new buildings, while it has great possibilities for remodelling and repairing purposes. It is made of selected woods reduced to fibrous form pressed into panels of about $\frac{3}{16}$ of an inch in thickness, forming a panelling of great toughness and durability. The Beaver Board Company, Ltd., have their London offices at 4, Southampton-row, W.C., these offices being fitted out with Beaver Board, and show very well the possibilities of the material.

Bell's United Asbestos Company, Ltd.

Stand 168, Row H.

Messrs. Bell's United Asbestos Company, Ltd., 59½, Southwark-street, S.E., and Dublin and elsewhere, exhibit at Stand 168, Row H, the various products of the company's Poilite Works at Harefield, Middlesex, the first to be equipped in Great Britain for the manufacture of asbestos cement roofing tiles and building sheets, on the revocation of the British patent in 1909. Poilite is composed of three-fourths of the best English Portland cement, and the balance of selected asbestos fibre, winnowed free from all impurities. The works of the firm are equipped with modern machinery and have a capacity for producing 5,000,000 sq. yds. of Poilite tiles and sheets per annum, the finished product, it is stated, being stronger than the same bulk of pure cement. The building forming the company's exhibit shows the application of this fireproof material for roofing purposes and for wall and ceiling linings, and the staircases will permit of visitors

The Architect of this building is Mr. W. C. Sisley, Architect to Good Health Association, Stamborough Park, Watford, Herts, and the contractor was Mr. T. G. Gorham, Godstone-road, Whyteleafe. The whole of the back of the building was rendered in two coats of the British Ceresit Waterproofing, with ¾-in. rendering; also the backs of two villas belonging to the building. (*See page* 5.)

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AND OTHER CEILING

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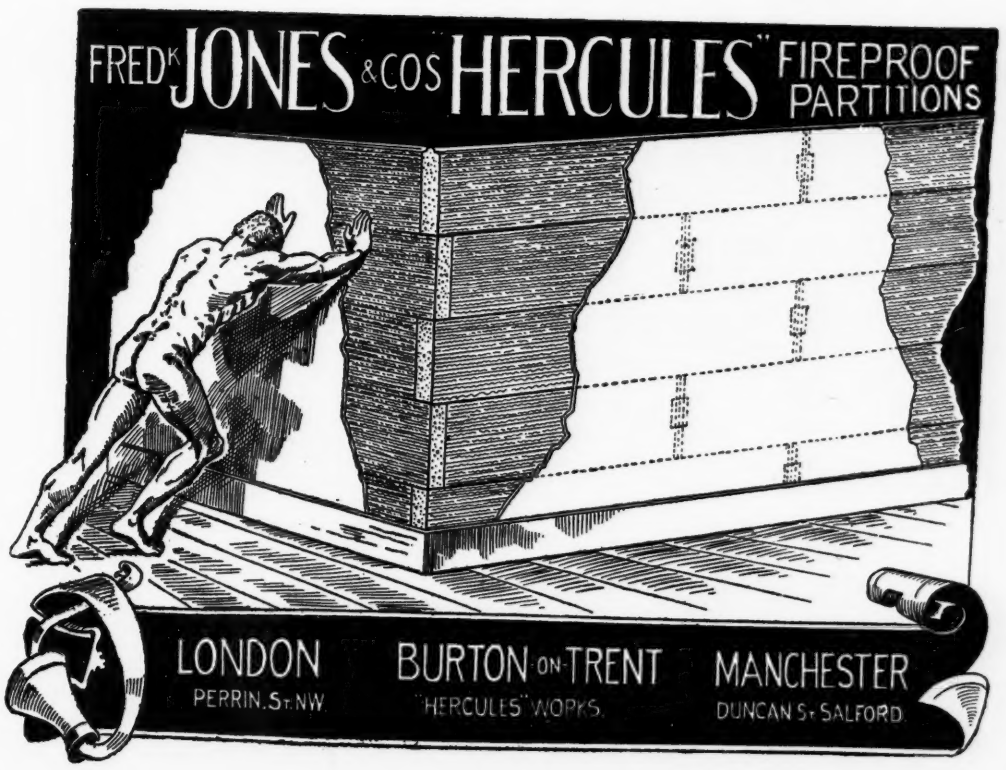

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making a close inspection of the method by which the tiles are secured to roof boards or battens in their various patterns. The exhibit includes "Roman Roofing Tiles" (Poilite Brand)—an alternative to corrugated-iron sheets for large plain roofs of 25 deg. pitch and upwards. An opportunity is afforded to visitors of witnessing tests, illustrating the relative values of tiles of standard thickness, as against those of thinner quality.

Messrs. Lewis Berger & Sons, Ltd.
Stand 59, Row D.

Messrs. Lewis Berger & Sons, Ltd., Homerton, N.E., occupy the same space, at Stand No. 59, Row D, as at the last exhibition, and, in addition to the specialities originated by the firm during their 153 years' establishment, they show new materials representative of the latest requirements in the decorative trade. The following are some of the special features:—Varnishes, shown on doors and panels, and applied under normal varnishing conditions, exhibiting the merit of the firm's special varnishes: "Matone," a washable flat enamel in liquid or paste (white and twenty-four shades); "Enamelec" white japan; "Imperishable" paint, a new enamel paint (white, black, forty colours, and special undercoatings); "Berjapan" white enamel, a combination of good quality and moderate price; "Varnol," which gives enamel finish, it is claimed, at paint price (twenty colours and whites); "Rockgloss" paint, hard and durable and economical (twenty-five colours and white); Berger's leadless paint, which, it is claimed, is safe and efficient (twenty-four colours and whites); "Maisone" washable distemper (white and thirty-three shades); Master Painters' paint, white and stone colours, specially designed for outside use; "Wundercote," one coat undercoating; Fire Engine and Post Office permanent reds, special oil-colours made and used for this purpose. Fully descriptive colour folders, booklets, etc., of every material shown are supplied to visitors on request.

The British Ceresit Waterproofing Company, Ltd.
Stand 210, Row J.

The British Ceresit Waterproofing Company, Ltd., 68, Victoria-street, London, S.W., exhibit at Stand No. 210, Row J, the following:—(1) A small revolving model of a house, standing in water and washed over with water by means of pipes attached to the building. A facing of Ceresit-Cement-Mortar on the outside keeps the interior absolutely dust-dry. (2) Two large glass cylinders containing water with bases consisting of slabs of Ceresit-Concrete which, notwithstanding the great pressure per square inch, remain dust-dry. (3) Small buckets divided into two sections, one constructed of Ceresit-Cement and the other of ordinary cement, and containing water. The part made of Ceresit-Cement remains dust-dry, the other lets through the damp. The material is well known, but we may add that Ceresit waterproofing is a simple and cheap method of insulating cement, mortar, and concrete against injury by water. An illustration of the Caterham Sanitarium, the back of which building was rendered in two coats of waterproofing, is given on page 2.

The British Uralite Company (1908), Ltd.
Stand 108, Row E.

The British Uralite Company (1908), Ltd., exhibit a pavilion constructed of Uralite and asbestos cement sheets and roofed with asbestone tiles, thereby making the building fireproof. The tiles make a cheap, durable, and effective roof covering, while the sheets may be used with advantage for walls, linings, and ceilings, being easily fixed with ordinary carpenter's tools. Stand 108, Row E.

The British Vacuum Cleaner Company, Ltd.
Stand 142, Row G.

The British Vacuum Cleaner Company, Ltd., Parson's Green-lane, S.W., have on view a range of cleaners manufactured under the "Booth" master patent of all types, from a 15-h.p. cleaner for very large buildings downwards. A good fixed plant at a moderate price, suitable for large country houses, theatres, etc., is the 2-h.p. model "C.C.," and for smaller town houses, cinematograph theatres, etc., the 1-h.p. model "E.F." should be inspected. Both these machines are fitted with the "Booth" patent rotary pump, and the machines represent examples of efficient vacuum cleaners. Stand 142, Row G.

Messrs. George M. Callender & Co., Ltd.
Stand 64, Row D.

Messrs. George M. Callender & Co., Ltd., of 25, Victoria-street, exhibit at Stand No. 64, Row D, a number of their specialities. An example is shown of a reservoir rendered watertight with Callender's sheeting, invented nearly forty years ago, which can be used for waterproofing reservoirs, tanks, ponds, and swimming-baths. The "Callendrite" damp-course shows the way in which this preparation stops rising damp. It is supplied in rolls 24 ft. long to suit wall widths up to 36 in. The price averages 2½d. per foot super. The "Ledcore" lead and bitumen damp-course is composed of a core of sheet-lead with a bitumen covering on both sides. It contains no coal-tar or pitch and can be used in any climate, the price being from 4d. a foot super. delivered. Callender "Protex" is a preparation for keeping walls dry, the advantages of which are demonstrated by a model. It has very adhesive qualities, no furring or lathing being required to key the plaster. Callender's "Bitusol" paint for iron and steel work of all descriptions is an absolute preventive of rust. It is claimed to be cheaper and better than any oil paint. Callender's genuine Natural Rock mastic asphalt and "Veribest" natural asphalt roofing are also shown, as well as "Bitubond" building composition for cavity walls, the latter being illustrated by a model.

Calmon Asbestos and Rubber Works, Ltd.
Stand 29, Row C.

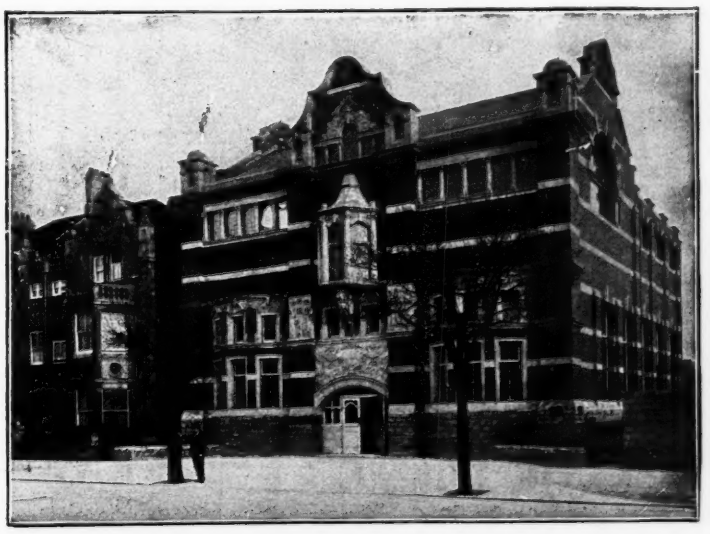
The exhibit of the Calmon Asbestos and Rubber Works, Ltd., 3, 5, and 7, Sheppy-place, Minories, London, E., Stand 29, Row C, shows Calmon asbestos roofing tiles, wall, and ceiling sheets. The exhibit includes:—Calmon asbestos CD. roofing tiles, which are supplied in one standard thickness 9-64 in. Various methods of laying can be adopted, but the one recommended for economy combined with efficiency is the diagonal style with C pattern tiles 15¾ in. by 15¾ in., allowing for an overlap of 2¾ in., except in particularly exposed or other abnormal positions, where they can be supplied for 3-in., 3½-in., or 4-in. overlap. These tiles are also supplied in a similar C pattern 11¾ in. by 11¾ in. for diagonal style roofing. Both sizes are also supplied in F pattern for honeycomb style and in C pattern with projecting lower point. The tiles are also made for double cover roofing in square B and rectangular D pattern 15¾ in. by 15¾ in., 15¾ in. by 7⅞ in., 11¾ in. by 11¾ in., 11¾ in. by 5⅞ in., and in fancy patterns. Special tiles are supplied when required for double eaves course. All tiles are sent out ready cut and holed according to style of roofing and overlap required, and are made in three colours—grey, blue, and red. The tiles can be nailed in the usual way to wooden battens or boards, or can be fixed direct to steel angle-irons. Calmon asbestos "CW" wall and ceiling sheets are supplied in two standard sizes 4 ft. by 4 ft. and 8 ft. by 4 ft., in thicknesses from 9-64 in. upwards. For walls and partitions the sheets are nailed or screwed to the uprights, which have to be spaced to suit the width of sheets. For ceilings the sheets can be nailed on to the joists direct, and the butt joints covered with wood or other moulding to form panels, or can be stopped and distempered, or papered.

Messrs. Candy & Co., Ltd.
Stand 114, Row F.

Messrs. Candy & Co., Ltd., 87, Newman-street, Oxford-street, London, W., show their well-known Devon fireplaces at Stand No. 114, Row F. The fireplaces are shown in briquettes, faience, and tilework, showing effects in dull eggshell and bright glazes. Specimens are shown of wood chimneypieces in polished mahogany, fumed and wax-polished oak and pine, also wrought hand-made metal interiors. We are informed that the Devon fires were placed first in the official tests carried out at the new Government offices by H.M. Office of Works and the Smoke Abatement Society, and were also selected by the public as the best fire for the ideal house in open competitions held in connection with the Ideal Home Exhibitions, for five rooms out of seven in 1909 and seven rooms out of nine in 1910. Specimens of paving bricks, tiles, and quarries are also exhibited.

The Carron Company.
Stand 238, Row L.

The Carron Company, Carron, Stirlingshire, and Phœnix Foundry, Sheffield (incorporated by Royal Charter in 1773), have an interesting display of their manufactures at Stand 238, Row L. The following are a few of the principal exhibits:—The "Aberdeen" interior, one of the company's new "Shire" series, the details of which are arranged from their collection of eighteenth-century original wood carvings, the panels being designed by Sir Robert Lorimer, architect, Edinburgh. Fitted to this interior is the company's "Carronwell" fire, to be seen burning; this fire is sunk with raised or flush hearth built on solid firebrick and having air-ducts conducting from any convenient point to positions under the bottom grate. The air supply is regulated by hit-and-miss ventilators. This type of grate is shown in order to demonstrate that the company's eighteenth-century firegrates can be adopted to this particular form of heating. On either side are other examples of the "Shire" series set with panels *en suite* and finished in armour bright. The "Orkney" has the "Edinburgh" fire: the "Selkirk" is arranged with "Phœnix" fire, which is rather shallower from back to front than the other fires mentioned. All these fires are interchangeable and are equally effective in heating power. Other fires shown



Weston-super-Mare Free Library and Museum.

(A building in which Callender's Sheeting has been used.)

include the "Carol," Carron base, and Segmental. An "Adam" suite with dog-grate, and in the front a "Georgian" example, show how the company can meet the demand for this class of work disassociated from the modern additions required by the scientific expert. On a central stand the company show several of their high-class ranges, together with a selection of mantel registers of the "Castle" and "Glen" series, these being all recent introductions. The stand is complete with a display of baths, railings, and electrical range, and some examples of the "Abbey" series of gas fires, etc.

Messrs. Walter Carson & Sons, Ltd.

Stand 227, Row K.

Messrs. Walter Carson & Sons, Grove Works, Battersea, London, S.W., show examples of their paints, including "Anticorrosion Paint," a special exhibit of work loaned from Arnos Grove Estate, Southgate, illustrating the long life of this paint; "Walcarite," a non-poisonous white paint ground in oil or ready for use, and having good covering qualities and durability (for inside or outside work); "Vitrolite," a well-known greenhouse paint, suitable for both inside and outside use; "Coverine," a flat white undercoating, twice as dense as white-lead; "Japolite," an elastic Japan white for external and internal decoration—this Japan has great covering power, flows well under the brush, leaving a good smooth surface; it is also supplied "flat"; "Flat Enamel"; "La Belle Enamels," stocked in thirty-two shades; "Muraline," washable water-paint, supplied in a dry powder—it dries with a "flat" surface, and is cheaper than oil paint; and "Maurice's Porceleine," made in fifty colours and a special quality for baths, in six tints. Stand 227, Row K.

The Cloisonné Glass Company.

Stand 7 and 8, Row B.

The Cloisonné Glass Company's stand is in Row B, Nos. 7 and 8. The exhibit consists in the main of panels for glazings to doors, windows, etc., executed in Adam style, landscape and figure work, modern style, etc., both flat and bent work. In addition they show a few objects used in the completing of the home, viz., hanging and table lamps and fire-screens.

Messrs. Ewart & Son, Ltd.

Stand 221, Row K.

Messrs. Ewart & Son, Ltd., 346, 348, 350, Euston-road, N.W., show at Stand No. 221, Row K, their "Lightning" geyser, which produces hot water for domestic purposes as well as for the bath. The "Elite" geyser, with shower attached, provides a hot bath in a few minutes, and the "Ever-Ready" boiler provides a quick service of boiling water for tea-making with low gas consumption. The "Califont" secures an automatic hot-water service throughout a house. By a patented system of automatic control the gas burns only while hot water is running, and the cost of gas burnt to obtain a hot bath averages ¾d. The firm also show their "Emperor" cowl, an efficient cowl for the cure of downdraught

The "Emperor" Cowl.

in chimneys, and their patent "Victoria," "Standard," and "Empress" ventilators. Ewart's lightning conductor fittings of improved types and patterns are also shown, and the firm's gas coppers, which require little space and are convenient and rapid in use.

The Expanded Metal Company, Ltd.

Stand 157, Row G.

The Expanded Metal Company, Ltd., York Mansion, York-street, Westminster, have an interesting exhibit at Stand 157, Row G. This system of reinforcement is widely popular here and has been amply tested in many important buildings throughout the country. As is well known, it consists of a series of stamped metal sheets, which, together with simple hangers, constitute the reinforcement. The system is easily handled and is of great strength, and can be used for floors, columns, ceilings, and in all other positions. It is peculiarly well adapted for suspended ceilings, air ducts, etc. The ¼-in., ⅜-in., and $\frac{7}{16}$-in. mesh lathings, which are made from sheets of rolled steel, are particularly adapted to form a key for plaster in ceilings, steel-work encasing, solid and hollow partitions, exterior walls, and other plasterwork. Expanded steel sheets in their various meshes and weights, which are also made from sheets of rolled steel, are specially suitable as reinforcement for concrete in foundations, walls, floors, roofs, arches, bridges, grain silos, coal pockets, tanks, reservoirs, dams, retaining walls, piers, abutments, pipes, sewers, conduits, etc., a few weights of the 1½-in. and 6-in. diamond meshes being occasionally used for such work. The lighter weights of the ¾-in. and 1½-in. diamond meshes are frequently used in concrete for encasing steelwork. Expanded steel bars in their various sections may be adopted as reinforcement for concrete in both cast articles and structural work. Practically any of the meshes in their various strengths may be used for openwork partitions, shop divisions, fencing, machinery guards, window guards, tree guards, etc., and the material is often made up into lockers for clothes, tools, etc., waste-paper baskets, letter baskets, and similar articles. At the stand are exhibited examples of expanded steel sheet and bar reinforcements in footings, columns, flooring, roofing, walling, etc.; expanded metal lathing and plaster ceilings, partitions, encasing, etc.; "Exmet" brickwork reinforcement in brick structures (the latter is a most interesting system for increasing the strength of brickwork); and examples of expanded metal. (See illustration below and on p. 11.)

Messrs. George Farmiloe & Sons, Ltd.

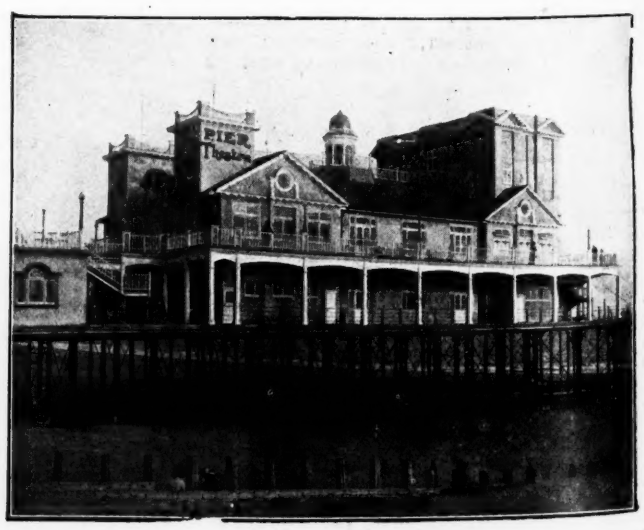
Stand 212, Row J.

Messrs. George Farmiloe & Sons, Ltd., of No. 34, St. John-street, West Smithfield, London, E.C., exhibit at Stand No. 212, Row J. Recognising that to-day the sanitary arrangements in the cottage have become quite as important as in the mansion, the firm are introducing cottage closets, baths, lavatories, etc., at a price suitable for the purpose, and, although they are not making a sanitary exhibit, they have on show specimens of their "Acasta" and "Lovaine" baths, "Brighton" lavatories, and an interesting collection of bathroom accessories. The baths and lavatories are inexpensive and sanitary, and what are required for cottage property. The chief objects of the exhibit are the display of "Oceanic" glass, made in five tints, and "Blackfriars" brand white-lead paint, "Blackfriars" white (leadless) paint for interior work, and Orr's "Zingessol" washable distemper. The whole of the stand is glazed with "Oceanic" glass in the various tints. The outside of the stand is decorated with "Blackfriars" brand white-lead paint, which the firm recommend for outside work, and the inside is decorated with

Cerebos Works, Greatham.

Mr. J. C. D. Armstrong, Architect.

(Expanded Steel-Bar-Concrete Foundation and Expanded Steel-Concrete Flooring, Roofing, and Tanks.)



Bognor Pier and Pavilion.

Mr. G. E. Smith, Architect.

(Expanded Steel-Bar-Concrete Bearers. Expanded Steel-Concrete Flooring. Expanded Metal Lathing and Cement Plaster.)

See that every Tin bears this Label.

NO OTHER IS GENUINE.

"COVERINE" (Registered)

The ORIGINAL Flat Undercoating White

FOR PAINTS AND ENAMELS.

ONLY ONE COAT REQUIRED.

Thus saving Time and Material.
Thin with Turpentine only to make ready for use.

ONE COAT is equal to two coats of White Lead.

"COVERINE"

Dries hard in a few hours. The finishing coat can be applied and the work completed the same day.

Full Particulars on application. Demonstrations at Building Exhibition, April 12 to 26, Stand K 227.

WALTER CARSON & SONS,

GROVE WORKS, BATTERSEA, LONDON, S.W.; and at BACHELOR'S WALK, DUBLIN.

By Royal Warrant to H.M. The King.

"RONUK" Ltd.

Contractors for the FIRST PREPARATION and POLISHING of all kinds of

FLOORING AND PANELLING.

ESTIMATES FREE. WRITE FOR BOOKLET.

Manufacturers of

"RONUK" SANITARY POLISH.

Awarded Five Medals by the Royal Sanitary Institute, including the Highest and only Awards ever granted to a Polish.

See Stand No. 116, Row F,
BUILDING TRADES EXHIBITION,
Olympia, London, W.

"RONUK," Ltd., Head Office and Works, Portslade, Brighton, Sussex. London Showrooms: 16, South Molton Street, W. Manchester Depot: 285, Deansgate.

Fretwork of various designs are shown in list.
Doors, Stairs, Shop Fronts, Woodwork and Timber of all description for Home or Export.
Fancy Gates.
REFUSE FOREIGN DOORS, ELECTRIC CABLE CASINGS—WE COMPETE—USE OUR MAKE.
WOODWORK FLOORING LAID COMPLETE AT ANY DISTANCE.
ENGINEERS SUPPLIED WITH ANY KIND OF TIMBER AND WOODWORK.
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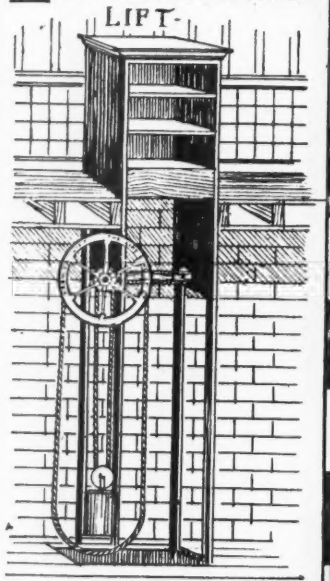
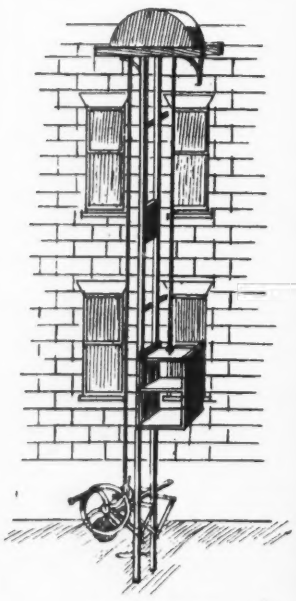
Over 1,000 Illustrations and 10,000 Prices.
The marvel of the age for Estimating in WOODWORK CATALOGUES.
927. Pennywell Rd, Bristol.
Fancy Front Door.
Outside Door
Owing to the enormous expense we have incurred in issuing the most up-to-date List, which, in our estimation, can be taken as a standard list in preference to any list in the World—fully illustrated and priced, 264 pages—we have decided to ask our friends to send P.O. 1/6 (export 3d. extra) and we will post a copy to any part of the World, together with four-fold, brass-jointed boxwood rule, and if both are not worth 2/6 to you, you can return same and we will refund money and any postage incurred by you in returning same.
Vestibule Screen
Casement or French Window
Mantels.
Bay Window

Do not omit to call at C. JENNINGS & CO.'S Stand in the Olympia Building Trades Exhibition, No. 164, Row H.

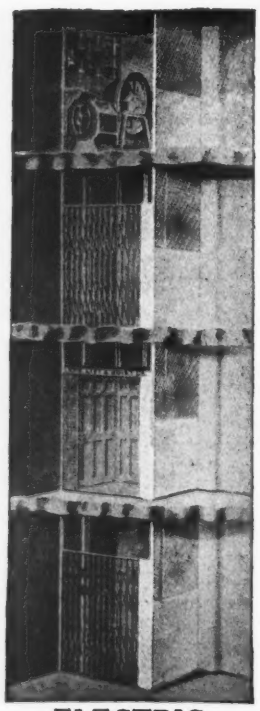
THE PREMIER DINNER LIFT.



Raising portion of floor automatically. No enclosure required. Thousands fixed.

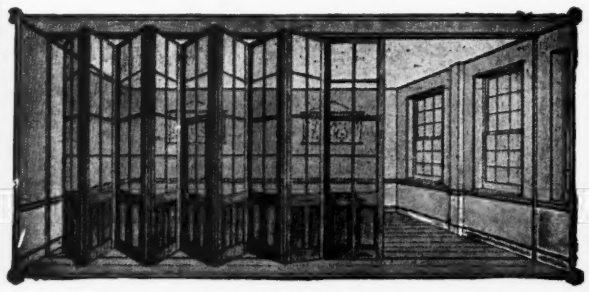


OUTSIDE TRADESMEN'S LIFT



ELECTRIC PASSENGER LIFT.

THE "PREMIER" FOLDING SCHOOL PARTITIONS.



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THE BEST AND CHEAPEST.

Now being fixed in all parts of the United Kingdom.

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ESTABLISHED 1870
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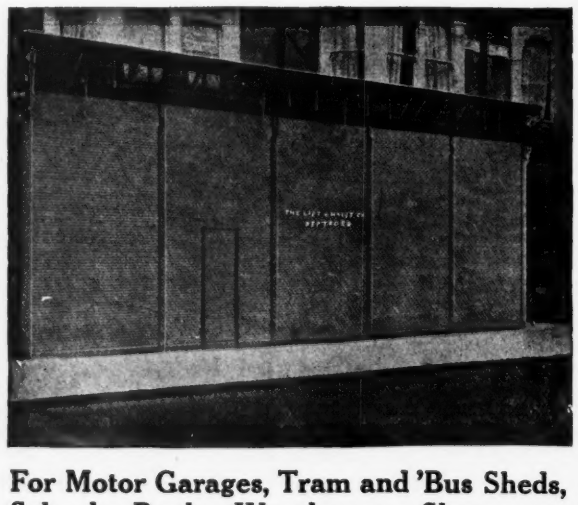
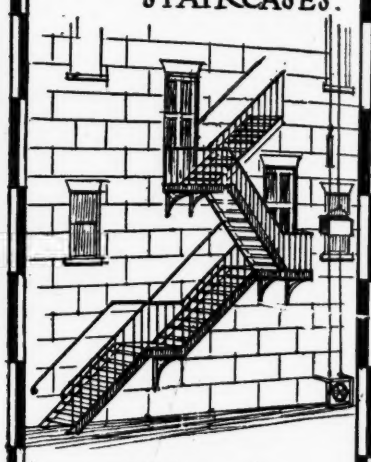
TELEPHONE NEW X 223
TELEGRAMS "ENDLESS" LONDON
30000 FEET SUPER FLOOR SPACE
CONTRACTORS TO H.M. GOVERM TS
AT HOME & ABROAD

REVOLVING SHUTTERS.



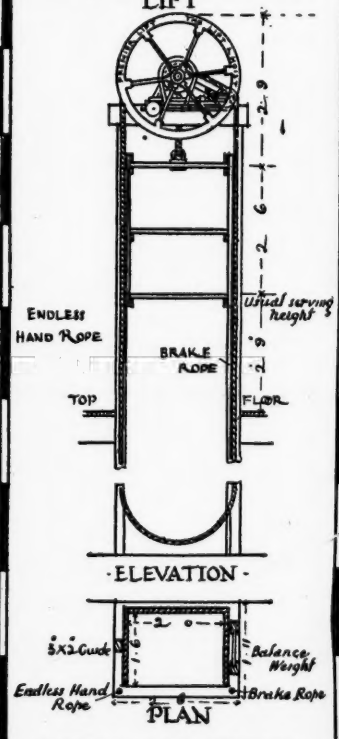
For Motor Garages, Tram and 'Bus Sheds, Schools, Banks, Warehouses, Shops, etc.

FIRE ESCAPE STAIRCASES.



Makers of Collapsible Gates.

THE "PREMIER" DINNER LIFT



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GITTINGS, HILLS, & BOOTHBY, LTD.

Manufacturers of Highest Class

VARNISHES, COLOURS, PAINTS, Etc.

SPECIALITIES.

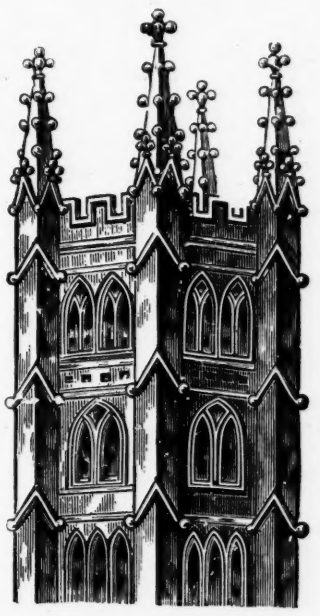
LASTOLINE.
The Finest White Enamel Made.

TOWER WHITE ENAMEL.
A second quality of above at **10s.** per gallon.

ASTON WHITE PAINT.
LEADLESS & NON-POISONOUS.

LINSOJAP.
A splendid Gloss Paint for finishing.

TRADE



"LUSTRE" MARKS.

Turnmill Street, LONDON, E.C.

ALSO AT . .

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Are showing at OLYMPIA, April 12 to 26 (BUILDING EXHIBITION).

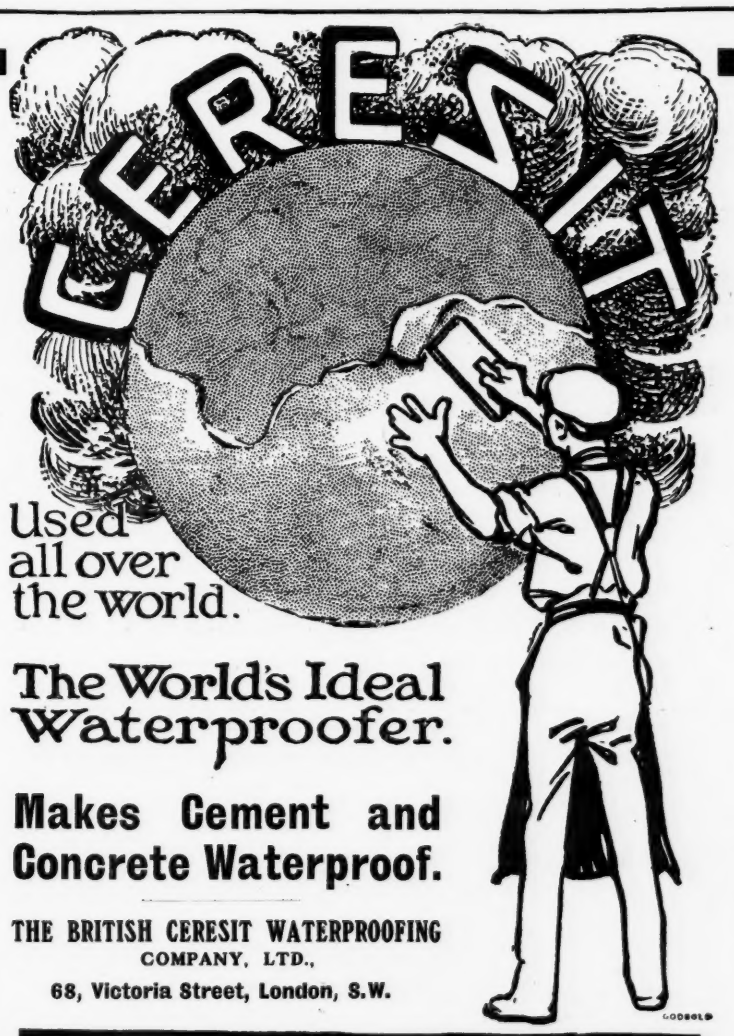
Come to Our Stand, No. 94, Row E.

OLYMPIA STAND 210

Ceresit is supplied by all the leading Builders' Merchants in Great Britain and the Colonies.

AGENTS.

The Contract and Works Supply Co., 41, Corporation St., Manchester; 16, Saville Street, Sheffield; and Scunthorpe. Casebourne & Co., Haverton Hill, Middlesbrough. James P. Corry & Co., Ltd., 8, City Quay, Dublin: Talbot St., Belfast. Lacey, Lincoln, & Co., Ltd., 32, St. Giles St., Norwich. C. Crew & Sons, 121, Queen's Road, Hastings. Blanchard & Sons, Poole, Dorset.



The World's Ideal Waterproofer.

Makes Cement and Concrete Waterproof.

THE BRITISH CERESIT WATERPROOFING COMPANY, LTD.,
68, Victoria Street, London, S.W.

OLYMPIA STAND 210

Write for Leaflet No. 71, which will be sent post free on request.

AGENTS.

Squirrell & Co., 4, Upper Station Road, Bexhill-on-Sea. C. P. Murray & Co., Neville Street, Leeds. W. Dibben & Sons, 80, 81, 82, 97, and 99, St. Mary's Road, Southampton. Gartcraig Fire Clay Co., 18, Charles Street, St. Rollox, Glasgow. J. & W. Henderson, Ltd., Slate, Cement, and Builders' Merchants, Aberdeen. J. & W. Henderson, Ltd., 122, George Street, Edinburgh.

CERESIT

SIRAPITE PLASTER

is NOT BEING SHOWN at the present BUILDING TRADES EXHIBITION, but it can be SEEN IN USE on many Buildings IN ALL PARTS OF LONDON.

Particulars of . .

THE GYPSUM MINES, LTD.,

MOUNTFIELD, ROBERTSBRIDGE, SUSSEX, & KINGSTON-ON-SOAR, Nr. DERBY.

MAHOGANY, OAK, WALNUT, TEAK, AMn. WHITEWOOD, BIRCH, ASH, KAURI PINE, PITCHPINE, MAHOBORN,

BANDINGS, STRINGINGS, MARQUETERIE,

JAMES LATHAM, LTD.

Established 1829.

HARDWOOD MERCHANTS,

124, Curtain Road, London, E.C.

Sawing and Moulding Mills: LEESIDE WHARF, CLAPTON, N.E.

HARDWOOD FLOORING MANUFACTURERS.

Stand 153 Row G.

PLYWOOD, DOWELS, TURNING.

Finely-Figured Mahogany, Oak, Teak, Walnut, &c.

We call ARCHITECTS' attention to our stock of finely-figured HARDWOODS, suitable for ENTRANCE DOORS, BANK FITTINGS, PANELLING, SHIP INTERIORS, &c.

ENGLISH OAK, ENGLISH WALNUT, SYCAMORE, SATINWOOD, ROSEWOOD, EBONY, MAPLE, DYED WOODS.

BUILDING EXHIBITION, OLYMPIA, APRIL 12 TO 26, 1913.

Stand 29. Row C.

Calmon Asbestos Slate

ROOFING TILES & SHEETS FOR CEILINGS, WALLS, & PARTITIONS.

Telegrams: "Nimbly, London." We are at present Roofing an Engineering Works with a roof area of 300,000 square feet, and fixing the Tiles direct on to angle iron battens. *Telephone:* Avenue { 3682 3143

CALMON ASBESTOS AND RUBBER WORKS, LTD.,

3, 5, 7, SHEPPY PLACE, MINORIES, LONDON, E.

BOOTE'S TILES

ILLUSTRATED CATALOGUE FREE ON APPLICATION.

Encaustic Flooring and Glazed Tiles.

Ceramic Mosaic.

Architectural Faience.

LONDON OFFICE: BIRKBECK CHAMBERS, W.C. STORE: ST PANCRAS GOODS YARD

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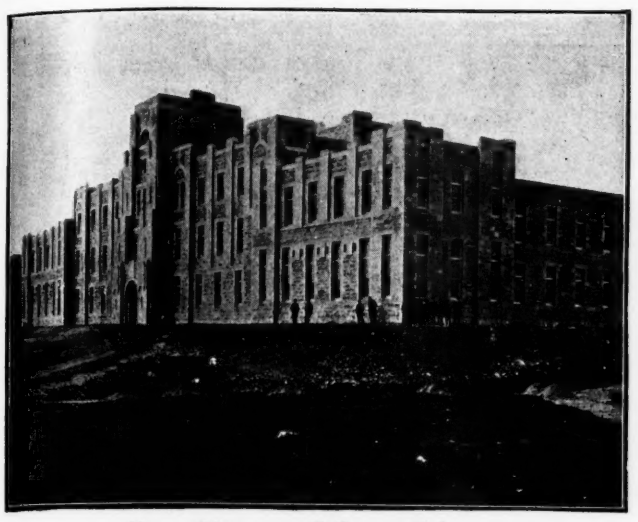
T. & R. B.'s Tiles were used in the Blackwall and Rotherhithe Tunnels under the Thames.

T. & R. BOOTE, LTD. THE PATENT TILE WORKS BURSLEM.

WERE FIRST USED OVER 50 YEARS AGO & AT THE PRESENT TIME ARE THE BEST OBTAINABLE.

ESTABLISHED 1842. SEVERAL MEDALS AWARDED

GOLD MEDAL AWARDED, BRUSSELS INTERNATIONAL EXHIBITION, 1910.



New Diocesan College, Galway.
Mr. W. A. Scott, A.R.I.B.A, Architect.
(Expanded Steel-Concrete Flooring and Roofing. *See page* 6.)

Infants' School, Bournville.
Mr. W. Alex. Harvey, Architect.
(Expanded Steel-Concrete Flooring. *See page* 6.)

"Blackfriars" white (leadless) paint, which they have introduced for interior work; this has covering power, it is said, equal to white-lead. The firm also exhibit Orr's "Zingessol" washable distemper, which they claim is a perfect water paint, and they also bring under notice "Filocol," which is a substitute for whitewash, which, we understand, has proved a great success. There is also on show a collection of brushes, among which are their "Old City Gate" ("O.C.G.") brand, which are very serviceable brushes at moderate prices. The firm also show sections of lead pipe, round and rectangular, compo pipe, lead encased tin pipe, tin washed inside lead pipe, showing the various strengths which these are made in. Messrs. Farmiloe are also makers of metal casements and leaded lights, and they exhibit specimens which meet the present-day demands. They have some gun-metal casements on the stand which well deserve attention.

The Farringdon Works and H. Pontifex & Sons, Ltd.

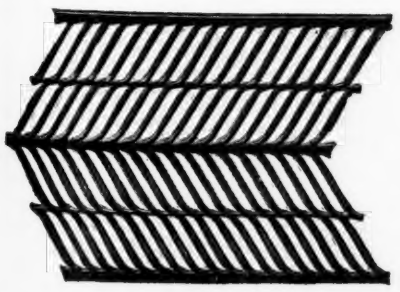
Stand 96, Row E.

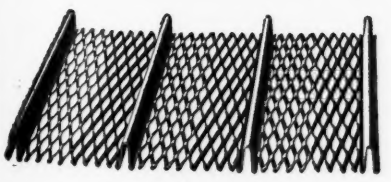
The Farringdon Works and H. Pontifex & Sons, Ltd., Shoe-lane, London, E.C. (temporary offices and works, 254B, Gray's Inn-road, W.C.), include among the various sanitary fitments and brasswork they show on their stand the following:—Pontifex's "Majestic" glass canopy spray, shower, and plunge bath; Pontifex's registered pattern "Niké" bath, with cast roll and continuous base in one piece; a selection of marble and other lavatories; Pontifex's "Superb" closet combination, fitted with their Patent "Nosound" cistern; and a large exhibit of copper work of special interest to the building trade. Stand 96, Row E.

The General Fireproofing Company.

Stand 95, Row E.

The General Fireproofing Company, of Nos. 34 and 36, Gresham-street, London, E.C., exhibit at Stand No. 95, Row E, where they show concrete piers formed of Self-Sentering supporting, sloping and flat roof, constructed partly of Self-Sentering and partly of Trussit, and concreted over. The suspended ceilings are constructed partly of herringbone lath and partly in Self-Sentering, parts of which are plastered over, showing the complete construction. On the one end is shown a fence constructed of Trussit without any temporary shuttering. On one side are plaster partitions constructed of Self-Sentering, and on the other plaster partitions constructed of Trussit. Inside, the firm have partitions constructed of herringbone lath, and they are showing two sections of floors constructed of Self-Sentering, one being a flat slab and the other an arched slab.





"Herringbone" Expanded Metal Lathing.
By General Fireproofing Company.

Messrs. Gittings, Hills, & Boothby, Ltd.

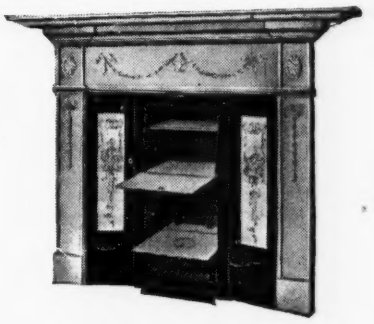
Stand 94, Row E.

Messrs. Gittings, Hills, & Boothby, Ltd., varnish manufacturers, 82, Turnmill-street, London, E.C., have a stand in Row E, No. 94. It is in the form of a tower, symbolical of the trade-mark of the firm, a trade-mark which is intended to typify the strength and durability of the varnishes, enamels, and colours manufactured by them. The special exhibits are three—*i.e.*, Tower white enamel, Aston white paint (non-poisonous), and "Linsojap." The stand is finished in Tower white enamel throughout, which is a second quality of "Lastoline," and is intended to supply the demand for a reliable white enamel at a price within the reach of the medium-class decorator. It is made of non-poisonous base, applies easily, flows out well, and has a brilliant lustre. As to Aston white paint, in view of the belief which exists in some quarters that coming legislation will place restrictions on the use of white-lead for house painting, the firm have, after experiments, placed on the market, we are informed, a non-poisonous white paint. The paint remains white on all outside work, being impervious to the fumes of sulphur, etc. It is shown on the stand ground in oil, and also ready mixed for use, and panels showing how it compares with white-lead are exhibited. "Linsojap" is a new process of gloss finishing to save the time and cost of a finishing coat of varnish. It combines colour and varnish by a new method which practically prevents the colour "settling" to the bottom of the vessel. It forms a coloured japan and varnish combined, and may be obtained in any colour. Demonstrations are given at intervals by the attendants, and anyone interested can test the materials for himself. The interior of the office is decorated with Tower water paint.

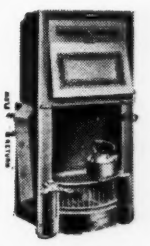
The Interoven Stove Company, Ltd.

Stand 232, Row K.

The Interoven Stove Company, Ltd., show an interesting exhibit in the form of a combination sitting-room grate and kitchen stove which has been used by H.M. Office of Works, Post Office, Admiralty, and many county councils; it is self-setting, simple to use and to clean, and requires no built flues. The mechanism is very simple and there are no complicated parts. The oven is equal in size to a 36-in. range oven and heats very quickly, providing room for an 8-lb. joint. Turning food is unnecessary, as the bottom of the oven is heated first, and the sides, back, and top are equally heated. The door when opened forms a strong dish rest in front of the oven. When used as a grate the Interoven forms a slow combustion grate of ordinary design. The prices range from 77s. 6d. to 82s. 6d., according to design and finish. Stand 232, Row K.



The "Interoven" Interior.
Size 20 by 38 by 14 deep.
Oven open, hot-plate lowered, showing boiler connectors and revolving trivets. Large oven, 15 by 13½ by 12 high. Boiler will work 35-gallon tank.



The "Interoven" (unfitted)
As a sitting-room fireplace. Oven closed. Hot-plate raised to form back to open fire.
Oven will take bread, joints, or pastry perfectly. Boiler for bath water, as in kitchen range, if desired.

Messrs. C. Jennings & Co.

Stand 164, Row H.

Messrs. C. Jennings & Co., timber merchants, joinery manufacturers, and general woodworkers, Pennywell-road, Bristol, are showing at Stand No. 164, Row H, fretwork screens and arches, doors in various designs, a polished teak shop front, and stairs leading from one side of the stand to the other. One elevation shows twenty-four panels as samples of various kinds of plywood, compo board, matching, etc. Windows are on view, showing in one case the application of the firm's P.T.O. fittings and in the other Miller's B.C. system. Doors are exhibited in about forty designs. Special attention may be directed to the

specimens of oak and ash plywood. Both kinds are particularly free from defects, and are scraped on one surface ready for use. Samples of "Teekard," which is a new substitute for teak, and is very effective in block flooring, are on view at the stand. Other features of the exhibit are newels and balusters in various designs, fencing, garden gates, balcony balustrading, mantelpieces, the firm's patent "Twink" geyser (with demonstrations at frequent intervals), mouldings, electric light casings and picture-rail, and the Smokure chimney-pot. The new fully-illustrated catalogue issued by the firm, containing much information for architects and builders, is also to be seen.

Messrs. Kerner-Greenwood & Co.

Stand 33, Row C.

An interesting exhibit is that of Pudlo, No. 33, Row C, which is the patent powder which renders cement waterproof, and is manufactured by Messrs. Kerner-Greenwood & Co., of King's Lynn. Pudlo is used with great success for damp walls and flooded basements, as well as for tanks, reservoirs, and swimming-baths, and for preventing efflorescence in cement work. At the stand can be seen bricks rendered in Pudloed cement on which water is kept spraying while the interior of the models, which can be seen, show that the treatment keeps the interior of the model bone-dry. A model of a flat roof with the gutters stopped up is also shown, the roof being filled with water, and in this case also the interior is exposed to view. A noteworthy

Deptford Swimming-Bath.

feature is the ease with which Pudlo can be mixed, for, being a powder, it is simply sifted with the cement, after which sand and water are added. The average quantity required is 3 lb. to 100 lb. of cement, so that if the contractor is using three of sand to one of cement he only requires 3 lb. of Pudlo to 400 lb. of the mixture. Pudlo lends itself to a fine finish in cement mouldings and rendering, the arrises being more pronounced and the work more dense and stone-like. Pudlo is exported in large quantities for use abroad, and we understand it is the intention of the makers to offer large discounts off their maintained prices so that the substance may be tried and tested on exceptionally favourable terms. The illustration is of the new Deptford Swimming-Bath, one of the latest buildings to have Pudlo included in its specification. It was built under the supervision of the Deptford Borough Surveyor.

Messrs. Kirchner & Co.

Stand 178, Row H.

Messrs. Kirchner & Co., 21, 23, and 25, Tabernacle-street, London, E.C. (Finsbury-square), show various wood-working machines, including the new four-cutter planing and moulding machine, with new bearings and pressure parts. The special feature of this machine is the facility of adjustment and changing of cutters. The exhibits include:—New rising table saw bench, fitted with new ring oiling bearings, improved fences, arranged to cant and swing over out of the way when not in use; improved hand feed planing and moulding machine, with tables 7 ft. long, fitted at the gap with interchangeable steel lips (the cutter-block is four-slotted so that moulding and other cutters can be fixed without removing the planing irons, and the bearings are new

Specimen of Satinwood Veneer.

By Jas. Latham, Ltd.

self-oiling type, requiring little attention); new combined over and under planing thicknessing and moulding machine, suitable for taking out of twist, rebating, chamfering, tonguing, and grooving, moulding of every description, and thicknessing with automatic feed (a special groove is provided along the front edge of the table to enable rebating work to be done without changing the irons); Kirchner's patent "Ideal" band saw, fitted with patent outside bearings to support the saw spindles at both ends (a heavy type machine, which will work equally well heavy and light work, and is fitted with many improvements not to be found in any similar machine); improved builder's tenoning machine, fitted with scribing spindles and new anti-friction type swing-table (this special table, whilst capable of carrying any weight, is extremely sensitive to the touch); new variety moulding and recessing machine, suitable for all classes of straight and irregular mouldings, recessing, stair stringers, trenching, etc., as required in a builder's shop. Stand 178, Row H.

The Kleine Patent Fire-Resisting Flooring Syndicate, Ltd.

Stand 119, Row F.

The Kleine Patent Fire-Resisting Flooring Syndicate, Ltd., 133–136, High Holborn, W.C., are exhibiting their reinforced hollow brick floors and roofs. This construction, which is now being exhibited at Olympia for the third time, has been used in over 500 building contracts in this country, a complete list of which can be found in their catalogue. The merits of this construction are well known, and the fullest information is to be obtained at Stand 119, Row F.

Messrs. James Latham, Ltd.

Stand 153, Row G.

Messrs. James Latham, Ltd., 124, Curtain-road, London, and Leeside Wharf, Clapton, N.E., have an exhibit at Stand No. 153, Row G, of fine specimens from stock of dry timber of every description, especially finely-figured Cuba and Tobasco mahogany, Wainscot and American oak, French and Italian walnut, Moulmein and Rangoon teak, and Mahoborn, American white wood, 6 in. to 40 in. wide; best Canadian yellow pine and red deal, grey wood and satin wood of purest gold colour, rose wood and cedar, birch and ash, etc., varieties of wood in great dissimilarity of colour and texture, forming a practical exhibit of the woods used to build, decorate, and furnish houses and public buildings. Some fine samples of panelling in oak and French walnut are shown to illustrate the quality of the mouldings turned out from the Leeside Mills of this firm. We illustrate herewith a panel of some fine satinwood veneer, of which Messrs. Latham hold the whole log.

Messrs. McDowall Steven & Co., Ltd.

Stand 14, Row B.

Messrs. McDowall Steven & Co., Ltd. (Stand No. 14, Row B), show their Lion ranges in various styles and sizes. This range is the latest production of the firm, and comprises the merits of the modern kitchener, with the addition of several patented improvements possessed by this range. An example of the Lion range is shown in action in conjunction with a bath, and the installation shows the full and continuous supply of hot water that can be obtained from this type of boiler. The result is secured by the design of boiler, the flue of which, it is claimed, cannot become choked. Other points of the Lion range are the patent soot-receiving shelves under ovens by means of which the flues can be cleaned and the soot removed; inner glass door to oven; pedal release to oven doors; swing fire front and improved raising and lowering bottom grate. Further, the bars of the Lion range are of cast-iron and self-contained. The firm also exhibits examples of their old English sand-faced brick slabbed fireplaces, slabbed tile fireplace surrounds, self-contained portable ranges, interiors, etc.

Messrs. Nettlefold & Sons, Ltd.

Stands 85 and 86, Row E.

Messrs. Nettlefold & Sons, Ltd., London, Birmingham, and Wolverhampton, are exhibiting (1) the Bardsley patent reversible door check and spring for fixing to the top of ordinary doors; (2) the patent double action Bardsley door check and spring for fixing to the top of swing doors; (3) single and double action Bardsley checking spring hinges for fixing into floors; (4) the Bardsley door-holder; (5) a selection of locks and brassfoundry. Stands 85 and 86, Row E.

The Palmer's Travelling Cradle and Scaffold Company.

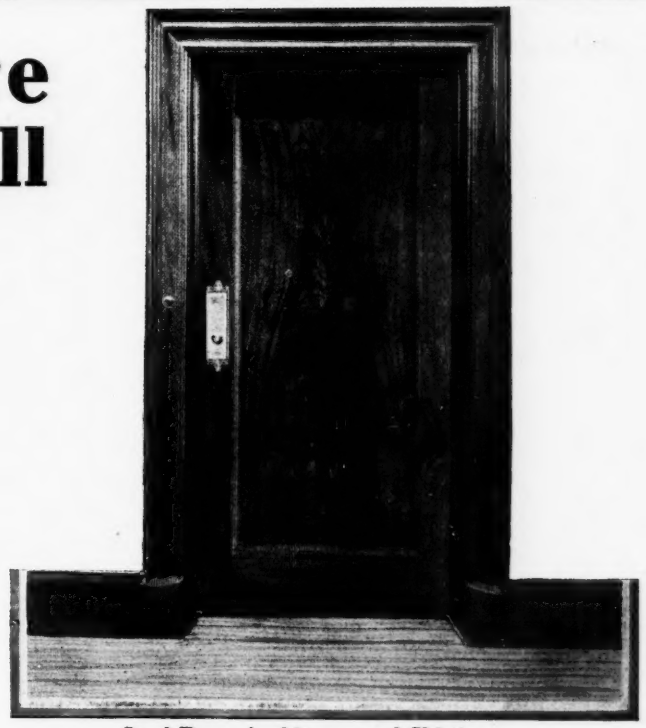
No. 8 Bay, Gallery.

The Palmer's Travelling Cradle and Scaffold Company, of Victoria Works, 112, Belvedere-road, London, S.E., are exhibiting in the Gallery, Bay No. 8, where they are showing

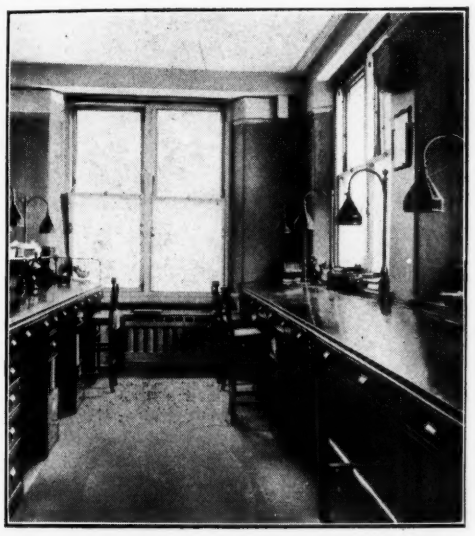
No fuel for fire means no fire at all

STEEL FURNITURE,
STEEL DOORS,
STEEL SHELVING, Etc.

Make your Buildings Completely Fireproof



Steel Door Architrave and Skirting.



Complete Equipments for Banks, Libraries, Offices, Clubs, Hotels, Etc.

Specify—

Art Metal Steel Furniture & Fittings

All Fire-Resisting — Durable — Clean.
Not affected by climatic conditions.

Steel Doors complete the value of Fireproof Construction.

Steel Furniture & Fittings prevent the loss of business records by fire and give maximum storage capacity for available space.

FINISH :—All work is finished in stoved enamel treated so its elasticity is retained, consequently it will not crack or chip.

PARTITIONS, DOORS, COUNTERS, DESKS, SHELVING, LOCKERS, TABLES, GRILLES, etc., etc.

Strong Rooms equipped with Adjustable Steel Shelving

See Stand No. 104, Row E,

BUILDING TRADES EXHIBITION, 1913.

Art Metal Construction, Ltd.

Offices and Showrooms :

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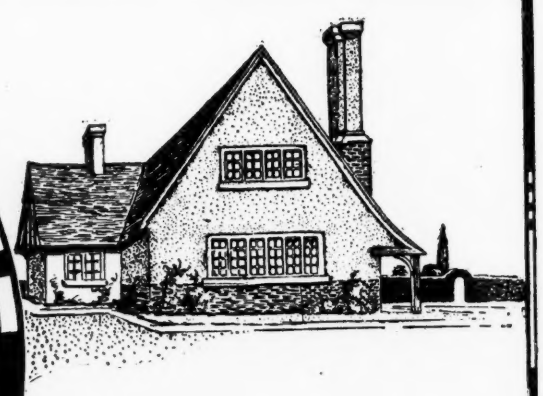
LONDON, E.C.

Factory :

SILVERTOWN.

Call or write for particulars. Estimates and Drawings submitted on application. Kindly mention "The Builder."

University of Edinburgh Library, equipped with our Steel Shelving and Glass Floors ten years ago.



A 7 lb tin when mixed ready for use will cover about 28 sq. yards

Mixed with warm water to the consistency of oil paint, one coat, even on new work, will give a result equal to two coats of oil paint.

There is no waste—If you do not use all in the tin, pour a little water on, and shut down the lever lid—It keeps. If you mix too much, pour it back in the tin. Again—it keeps!

Hall's Distemper

Registered Trade Mark.

is used in the Houses of Parliament, Metropolitan Water Board, Board of Health, Custom Houses, Royal College of Physicians, etc., etc., and is in popular demand in all classes of homes.

Wherever there is a moderately good wall it pays to use Hall's Distemper in preference to paperhanging; this standard specification is recommended. Stripped Walls, picture rail, plain white or stencilled frieze, white or stained woodwork, stippled Hall's Distemper Walls.—It's clean, quick, and healthy work!

Hall's Distemper is made in two qualities, for inside and outside use, and in 70 colours, ranging from white and creamy tints to rich dark colours.

Sample shade card and full particulars from the Sole Manufacturers—

SISSONS BROTHERS & COMPANY, LIMITED, HULL.

London :—199[B] Borough High Street, S.E.

Liverpool—65, Mount Pleasant. Reading—6 Gun Street. Glasgow—113, Bath Street.

T308

ladders of many kinds and their patent lock for extending ladders or towers, which is an improvement on any previously introduced. The firm are also showing their registered wire scaffold lashings, which are manufactured at the stand, and they also show their registered steel putlog. Trucks and other productions of the firm are on view, and illustrations and examples of various scaffolds, including their well-known cradles.

Patent Rapid Scaffold Tie Company, Ltd.

Stand 67, Row D.

The Patent Rapid Scaffold Tie Company, Ltd., are showing their well-known scaffold ties in actual use, and the advantages of these ties are illustrated by demonstration at frequent intervals. Photographs are also shown of important buildings where the scaffolding has been erected by this company's system. The company record rapidly increasing sales of their Scaffixers. Stand 67, Row D.

The Phœnix Engineering Company, Ltd.

Stand 9, Row B, Gallery.

The Phœnix Engineering Company, Ltd., show on Stand No. 9, Row B, Gallery, the "Floodgate" pump mounted on tank shown in operation, suitable for raising large quantities of muddy or gritty water, sewage, etc. One "Floodgate" pump mounted on steel barrow, with suction hose and fittings; one "Floodgate" pump mounted on trestle; one "Twin Floodgate" pump on steel carriage, for quantities up to about 6,000 gallons per hour; one "Highland" lift and force pump on steel barrow, for lift and force up to total of about 60 ft.; a diaphragm pump mounted on tank shown in operation; a diaphragm pump mounted on steel barrow; and a diaphragm lift and force pump are also shown. Other exhibits of the same firm are the "Phœnix Rapid" patent continuous heating tar-spraying machine, fitted with jib crane, etc.; the "Phœnix Rapid" patent drag brush tar-spreading machine; and the "Phœnix Rapid" patent vertical tar-spraying machine.

Messrs. Pinchin, Johnson, & Co., Ltd.

Stand 150, Row G.

Messrs. Pinchin, Johnson, & Co., Ltd., Minerva House, Bevis Marks, E.C., exhibit "The Temple of Minerva," which shows four sets of double columns, supporting a circular entablature and dome. It is entirely finished with satinette enamel—gloss white and flat white—with the exception of the dome, which is gilt. An examination of the columns will convince the expert that there is reason for claiming that satinette enamel finishes like choice china, a perfectly white, smooth, and lustrous surface. Minerva paint, which the firm guarantee to be pure, is shown upon a revolving exhibit. Primer, opaque white for undercoats, gloss whites, and flat white for finishing are displayed in order of application, together with a specimen of each of the twenty-four standard colours or stainers, and the ninety-six proportionate reductions obtained therefrom by simply adding certain quantities of gloss white. Deydol distemper claims a complete colour scheme to itself, as well as being shown upon the plaster panel walls of the office. Deydol is not an ordinary distemper, but a really washable water paint, soft in texture of finish, great in covering capacity, and having sanitary qualities. On the latter point it has secured the certificate of the Incorporated Institute of Hygiene. Veritone, the new stain and scumble, is shown as a stain on pitch-pine panelling. The panels are finished with Minerva flat varnish, while the stiles and rails are in Minerva brilliant varnish. The grain of the wood is well shown, and several panels are also on view where Veritone is used as a scumbling or graining colour for a ground coat. "Minerva Varnishes," "Silveroid" (a silver paint), "Syronite" (rust preventive), and other specialities are also to be seen, and any information, literature, colour cards that may be required can be had on application at the stand, No. 150, Row G.

Messrs. Ragosine & Co., Ltd.

Stand 55, Row D.

Messrs. Ragosine & Co., Ltd., exhibit at Stand No. 55, Row D, "Dixon's White," the non-poisonous pigment, and a technical expert will answer questions put and give demonstrations of the use of Dixon's White and Dryoline, the liquid drier which should be used with it. The great merits of Dixon's White are, in the first place, its non-poisonous character; secondly, the way it maintains its snow-white colour, while a further advantage is the good finish that can be obtained with its use, resulting from the fineness with which it is ground It is claimed that Dixon's White oxidises much less rapidly than lead paint under atmospheric influences, and it also forms an excellent base for enamelling and is little affected by fumes of gas or continual moisture.

Messrs. W. Edgcumbe Rendle & Co., Ltd.

Stand 175, Row H.

Messrs. W. Edgcumbe Rendle & Co., Ltd., of Westminster Chambers, 5, Victoria-street, London, are exhibiting their "Invincible" system of glazing at their stand, No. 175, Row H. The firm are now carrying out work at the new terminus at Waterloo for the London and South-Western Railway; new cargo sheds at Immingham Docks for the Great Central; new cargo sheds, Southampton Docks, for the White Star Steamship Company; extension to Broad-street Station for the London and North-Western Railway; Baker-street Station for the Metropolitan Railway, and elsewhere.

"Ronuk," Ltd.

Stand 116, Row F.

"Ronuk," Ltd., sanitary polish manufacturers and contractors for polishing floors, panelling, etc., of Portslade, Brighton, London, and Manchester, give in their exhibit at Stand No. 116, Row F, a practical illustration of the advantages to be gained by the use of their sanitary polish in the treatment of woodwork and the excellence of the results as compared with those obtained by ordinary wax polishing. The stand is constructed entirely of oak, including the four columns supporting the cornice and ceiling beams. One side only is closed, and is filled in with oak panelling; the remaining three sides are open. It is thus possible to see the effect of the "Ronuk" treatment on the oak block flooring, which is fully exposed to view.

Miss G. Saunders.

Miss G. Saunders, shorthand-typist, specialist in motor and engineering trades' work, 36, Broadway, Westminster, S.W., has a typewriting office in the gallery at the Exhibition—No. 8, Row B, Surveyors' Section.

The Siegwart Fireproof Floor Company, Ltd.

Stand I, Row A.

The Siegwart Fireproof Floor Company, Ltd., Thanet House, 231, Strand, W.C., show at their stand, No. 1, Row A, samples of their hollow Siegwart flooring for 15-ft. spans, also Siegwart roofing, supported on steelwork. They also show a portion of sloping roof, as used in a large mansard roof. The advantage of Siegwart beam construction over *in situ* concrete is that no centering is required, thus dispensing with delay to other trades, caused by the propping to have to remain in position until the *in situ* concrete is set. The beams are delivered to the site in a matured condition ready for fixing. The method of fixing is very simple, the beams being placed side by side on the supporting walls or steel joists and the joints grouted in with cement mortar, when the floor is ready for use.

Messrs. Sissons Bros. & Co., Ltd.

Stand 109, Row F.

The stand of Messrs. Sissons Bros. & Co., Ltd., Hull, and 199B, Borough High-street, London, S.E., represents two apartments in a mansion of the Georgian period, intended to give practical illustrations of the scope of Hall's distemper, and of the variety of enamels, varnishes, paints, etc., manufactured by the firm. The interior decorations are Georgian throughout. The colour scheme is green, white, and pink. The smaller room serves the purpose of displaying numerous specialities of the firm on shelves round the room, included in which are:—Aperfectol paint, Sisco white Japan, enamels, Sisco mixed paints, Rustikol, "Sunphas" red, and varnishes. The walls are treated in white Hall's distemper and panelled out like the large room. The exterior walls are panelled and decorated with floral pendant and festoon mouldings. Stand 109, Row F.

Messrs. G. R. Speaker & Co.

Stand 63, Row D.

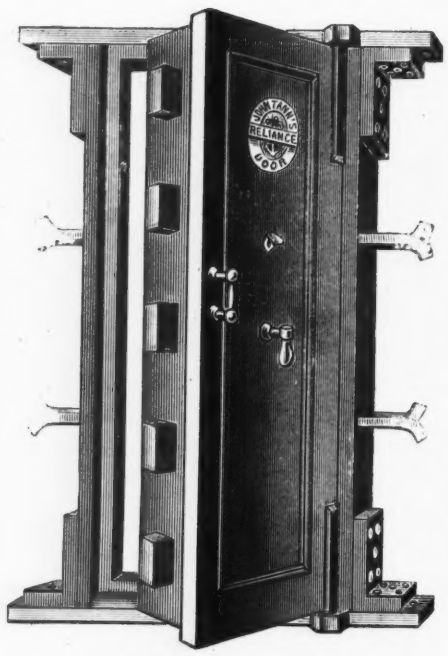
Messrs. G. R. Speaker & Co., of No. 29, Mincing-lane, E.C., show a wood and steel-framed building covered with their "Eternit" slates and lined throughout with "Eternit" sheets, employing the different methods of fixing. A particular feature is a special patented method by which the sheets can be fixed to any form of steelwork, the advantages being (*a*) rapidity of construction, (*b*) low cost, (*c*) a saving in labour. The simplicity of this device facilitates erection in colonies where skilled labour is not always available. Some portions of the pavilion at the exhibition have not been completed, to show the wood and steel construction adapted specially to suit their speciality. The exhibit is designed to show the use of Speaker's "Eternit" slates for roofing and sheets for lining purposes, and more especially a fire-resisting building constructed at moderate cost. Stand 63, Row D.

Messrs. John Tann, Ltd.

Stand 46, Row C.

Messrs. John Tann, Ltd., safe and strong-room engineers, 117, Newgate-street, London,

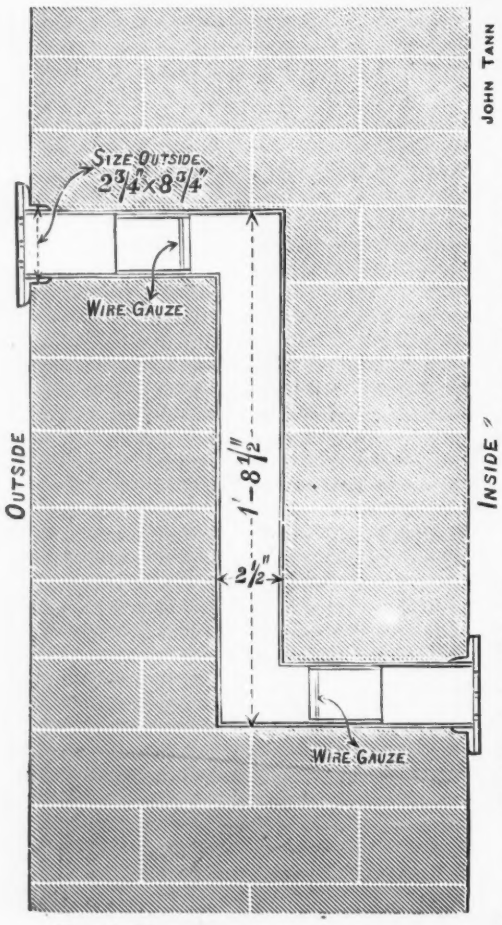
The "Ronuk" Stand.



Strong-room Door.

By Messrs. J. Tann, Ltd.

E.C., are making a special show this year of high-class security work in the way of safes and strong-room doors, drill-proof in every part. They are also calling special attention to their party-wall and warehouse doors, which are suitable for special risks of fire. They are made on the lines of a strong-room door, with the fire-resisting chambers 4 in. thick, filled with the firm's patent steam generating non-conducting composition. They show their new strong-room ventilator, which they claim to be superior for fire-resisting purposes and for convenience in building in to any other ventilator on the market. Messrs. Tann are also showing bankers' safes and jewel safes, and the bullion-room doors with steel vestibules. The exhibit also includes several other safes and doors, and everything appertaining to strong-room construction. The ventilators are made of Siemens-Martin steel, galvanised to prevent rusting, the same size over all as an ordinary brick, so that they may be built into walls with great facility.

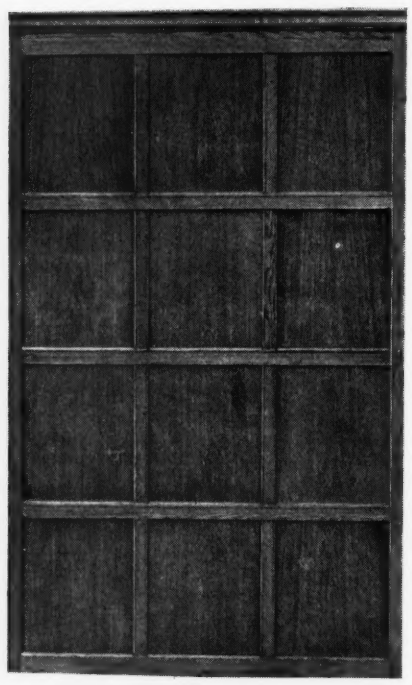


Tann's Ventilator for Strong-rooms.

To each ventilator are fixed, both at the inside and outside ends, perforated plates. The upper and lower arms of the ventilator are also each provided with fine galvanised wire gauze similar to that used in miners' safety lamps. This prevents the passage of flame through the ventilator. In cases where the door of a strong-room can be left open all day, the room being protected by a ventilating grille or gate, sufficient ventilation is generally obtained through the door opening, but if the door is kept closed for considerable periods, at least two ventilators should be provided, one near the top of the room and one near the bottom, preferably at opposite corners. Stand 46, Row C.

Venesta, Ltd.
Stand 3, Row A.

Venesta, Ltd., 1, Great Tower-street, London, E.C., show at Stand No. 3, Row A, their panelling and parquet flooring, of which many samples are on view in different designs and ornamental woods. The stand is constructed by the firm of Venesta panelling, and their parquet floor and ceilings are shown. Attention is also directed to the Venesta art panels, which are photographs reproduced actually on wood



Tudor Oak Panelling.

By Venesta, Ltd.

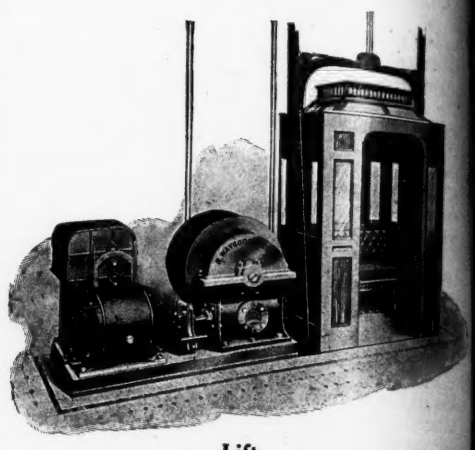
and which are very effective, whether utilised as panels in a scheme of wall panelling or framed as pictures for wall decoration. The process adopted in the manufacture of this panelling and the squares for the firm's parquet floors prevents shrinkage or cracking, it is claimed. Venesta Tudor oak panelling, by means of an economical process of manufacture, can be supplied at from 1s. 3d. per square foot, including fixing and wax polishing in London. Samples of Venesta theatre chair seats and counters are included in the exhibits, and also a Venesta screen with photographic panels. Embossed panels for friezes and various other uses are also being shown.

Messrs. R. Waygood & Co., Ltd.
Stand 125, Row F.

Messrs. R. Waygood & Co., Ltd., makers of lifts and cranes, Falmouth-road, London, S.E., are exhibiting one of their up-to-date electric passenger lifts, to run between the ground floor and gallery for the use of visitors. This lift is controlled by car switch, with a self-centring detachable handle. The firm are also exhibiting their electroil lift, and they have a model of their full automatic push button electric passenger lift and three models of hand lifts, as well as various lift accessories. Stand 125, Row F.

Messrs. John P. White & Sons.
Stand 156, Row G.

Messrs. John P. White & Sons, of the Pyghtle Works, Bedford, and 123, New Bond-street, exhibit their patent fire-resisting



Lift.

By Messrs. R. Waygood & Co., Ltd.

teak veneered flush hospital door, which is now largely used. It has been designed to meet the increasing need for a flush British-made hospital door. The foundation of the door is composed of an inner frame constructed in bone-dry yellow pine, with wide styles bottom, top, and lock rails, the panel spaces being filled with flush muntins about 3 in. wide and spaced about 2 in. apart, thus making a solid flush foundation for the door with a finished thickness of $1\frac{5}{8}$ in. Each side of this foundation is then covered with an asbestos composition slab $\frac{3}{16}$ in. thick, having a toothed surface to receive veneer, and the veneer is then applied, the sides and top and bottom of the door being lined with a solid hardwood fillet of the same wood with which the door is veneered. A less expensive door is formed by painting the asbestos directly. The price of these doors is about 3s. 7d. per foot super. Stand 156, Row G.

Whitfield's Safe and Door Company.
Stand 134, Row F.

Whitfield's Safe and Door Company, Oxford-street, Birmingham, are showing steel fire and burglar resisting bullion vault door and grille in lobby frame, fire and thief resisting strong-room doors, bankers' branch bank safe, fire and thief resisting safes, and special jewel safe for bedroom or boudoir use. Stand 134, Row F.

The Willesden Paper and Canvas Works.
Stand 113, Row F.

The Willesden Paper and Canvas Works, Willesden Junction, N.W., are showing at Stand 113, Row F, their usual old-established lines of underlining and underslating Willesden paper, in varying thicknesses for the several purposes for which they are employed, one-ply, two-ply, and four-ply paper. Panels of the various qualities of Willesden canvas in varying thicknesses and colours are shown round the stand, and they are again exhibiting several of their model tents, to enable buyers to form some opinion of the design and appearance of the completed article.

The Yockney and Hartham Park Stone Company, Ltd.

The Yockney and Hartham Park Stone Company, Ltd., Corsham, Wilts, and South Lambeth Wharf, Great Western Railway, London, S.W., show specimens of the various kinds of stone they quarry, including "Corsham Down," which is a good stone for general use, even in texture, regular in colour, easy to work, and is obtained from the Corsham Down and Box Tunnel quarries; "Ridge Park" (Regd.), specially durable and suitable for the trying atmospheric conditions of large towns, also for exposed positions on the coast (it is one of the strongest freestones quarried in the Bath district, crushed at 268·9 tons per square foot); "Hartham Park," quarried from Lord Islington's estate, and used for the building of his mansion at Corsham (a good, regular, reliable stone, for use in any position above the ground level); Copenacre Box-ground, specially suited for exposed positions, and strongly recommended for weatherings and projections; "Pulpit Bed" (Regd.), a fine stone, suited for general interior work, also for rich inside decorative work and carving; and "Corngrit," largely used for weight-carrying purposes and interior work.

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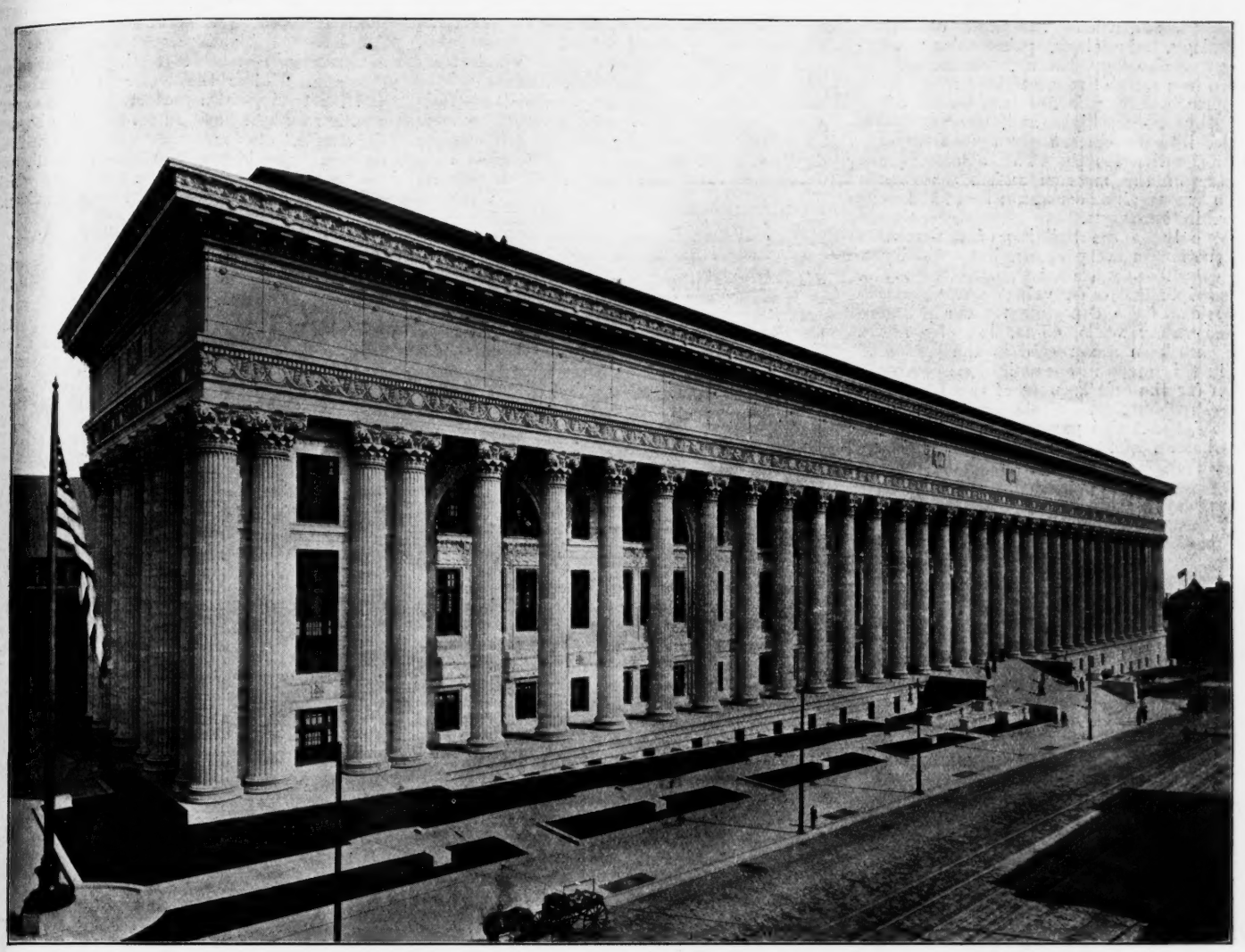

New York State Education Building, Albany, N.Y.

Messrs. Palmer & Hornbostel, Architects.

NEW YORK STATE EDUCATION BUILDING.

THE inception of the idea of the New York State Education Building, at Albany, resulted from the unification of the two State Education Departments in 1904, and it was felt that a great State building would appropriately commemorate this accomplishment and at the same time demonstrate the interest of the State in both popular and higher education.

In June, 1906, the State Legislature passed a Bill authorising the construction of the building at a cost of 3,500,000 dollars, exclusive of the site, and in May, 1907, the designs of Messrs. Palmer & Hornbostel, of New York City, were finally accepted. The contract for the entire work was let to the R. T. Ford Company, of Rochester, at the price of 3,622,282 dollars, in July, 1908, and building operations were commenced before the end of the same month.

The architectural treatment was decided after careful consideration. It was felt that the building must be dignified and imposing, and that its architecture should be of character suited to all succeeding ages. Therefore, the classical design now realised was selected as that best meeting essential requirements.

The building has a frontage of 660 ft. on Washington-avenue, and is 140 ft. wide, a wing at the back measuring 190 ft. by 166 ft. in plan. As the building stands 50 ft. back from the building line, space is provided for lawns and walks between the structure and the roadway, and for the easy flight of steps leading up to the main entrance.

The principal façade consists of a massive colonnade resting upon a substantial stylobate, between the colonnade and the building being an arcade of ample proportions. The front wall is broken by a series of large semi-circular openings, providing for window areas of ample size, and the entire façade is surmounted by a solid entablature, imparting unity and strength to the construction as well as to the design.

As shown on the accompanying illustration, the columnar treatment is also carried across the ends of the building. The materials on the front and end façades are white marble, terra-cotta, and grey granite, the last of these being used for the stylobate. The back walls are of light coloured vitreous brick, with terra-cotta dressings.

In the basement are rooms for services of all kinds—rock-cutting plant for the museum, workshops, caretakers' and cleaners' rooms, staff and public toilet-rooms, stores, delivery rooms, a driveway and courtyard for the reception of goods, lift, ventilation, heating and lighting plant, and the lower floors of the great book stack of the library.

At the eastern end of the building is a large hall beginning in the basement and occupying two stories. The auditorium has a gallery and promenade on three sides, the stage proscenium being treated architecturally by an arrangement of four Corinthian columns, forming a curved loggia flanked by niches for two portions of an organ. The auditorium has seating accommodation for 900 persons, and is lighted by twelve large windows.

To the right of the vestibule at the main entrance on the first floor is a massive staircase leading to the second floor rotunda. A broad vaulted corridor runs east and west along the entire length of the first floor, and is terminated by a doorway at each end. This corridor affords access to the administrative offices of the Education Department. The Regent's Chamber has walls of Indiana limestone and an oak ceiling with carved beams. The Commissioners' rooms are treated in the Tudor style with mahogany wainscoting.

From the rotunda on the second floor several striking vistas are presented. To the north extends a vaulted corridor 40 ft. wide, 46 ft. high, and 50 ft. long, leading to the general reading-room; to the east a shorter vaulted corridor leads to the periodical reading-room and medical library; and to the west a similar corridor leads to the law library.

Situated at the intersection of these vaulted corridors, the rotunda provides an appropriate climax to the architectural treatment. Over the rotunda is a circular colonnade supported on pendentives, the colonnade in turn supporting a dome in which a large skylight provides for the admission of daylight to the rotunda. The latter and the vaulted corridors in connection are faced in Indiana limestone.

Including its wings, the rotunda measures about 100 ft. by 100 ft., and the height of the dome is 94 ft. above the second floor.

The general reference reading-room occupies nearly the entire north wing. It is immediately above and in communication with a series of stack-rooms, with accommodation for 2,000,000 books. The architectural treatment of the reading-room is bold and novel, and consists of twelve slender bronze columns supporting a series of terra-cotta domes. The walls of the room are of stone and pierced by eleven leaded glass windows of large size. The room is 130 ft. long by 106 ft. wide, and the height of the domes is about 50 ft. above floor level.

The second floor also contains offices, card catalogue rooms, studies, cloak-rooms, and toilet-rooms. On a mezzanine floor at the east end are the offices of the secretaries to the State Board of Medical Examiners and the State Board of Pharmacy, and of the inspector of nurse-training schools.

On the third floor are the offices and work-rooms of the Examinations Division, the Educational Extension Division, the Public

Records Division, the History Division, and the Library School and the general conference-rooms of the various State Boards of Examiners. The main reading-room of the library also extends through this floor.

The fourth floor is entirely occupied by the State Museum, where the State collections in geology, mineralogy, palæontology, entymology, archæology, botany, and zoology are housed in a suite of rooms lighted from above. The principal room is 570 ft. long by 54 ft. wide by 50 ft. high, and, although subdivided into sections, affords a vista throughout its entire length. The offices of the director of the museum and his assistants are on a mezzanine floor at the back, adjoining the exhibition-rooms.

Not only is the building of fire-resisting construction in every detail, but special provision has been made for the safe custody of manuscripts and other valuable relics in the possession of the department. For this purpose a safety vault, 43 ft. long by 15 ft. wide, has been constructed in the basement, and in this room is a smaller one of special design for the safe keeping of the Emancipation Proclamation, Washington's Farewell Address, the André papers, the King Charles II. Charter, and other priceless historical relics.

The grand staircase and rotunda will be adorned by mural paintings by Mr. W. H. Low, the well-known American artist. The total area to be so treated amounts to 1,730 sq. ft., divided into thirty-two panels. We understand that fifteen of these spaces may contain developed compositions of several figures, that four will permit the portraying of a single figure, and that the others will have to be filled with decorative work.

Reviewing the plan of the building as a whole, attention may be directed to the excellent arrangement of practical details and the admirable manner in which the construction offers every modern facility for administration, and assures the most complete protection against fire risks.

It is interesting to recall the fact that the first public school was established in the State in 1633 at New Amsterdam by the Dutch, and that King's College, now Columbia University, was founded in 1754 by George II. The State Education Department to-day controls some 12.000 public school houses, in addition to Universities, colleges, special schools for professional training, and secondary schools, making up more than 13,000 buildings, the value of which is estimated at nearly 363.000.000 dollars.

The building briefly described in this article was formally opened by the late Mr. Whitelaw Reid in October last, and we have to thank the Commissioner of Education, Dr. Andrew S. Draper, for particulars relative to his department and for the photograph reproduced as an ilustration.

THE SURVEYORS' INSTITUTION:

REINFORCED CONCRETE.

AN ordinary general meeting of the Surveyors' Institution was held on Monday at No. 12, Great George-street, S.W., when a paper on "Reinforced Concrete" was read by Mr. Percy J. Waldram, in the course of which he discussed on broad lines the reasons why in some cases it is advantageous and profitable to use reinforced concrete, whilst in other cases it is not. Even in beams, he said, which "are reinforced in compression we are constantly hampered in design by the capabilities of the concrete, which unfortunately are not very high; and in spite of all the important structural advantages resulting from a monolithic form of construction, in which the strength of each part of a structure enhances that of its neighbours, reinforced concrete is necessarily heavy and weak for its size as compared with steel or wood. This disadvantage is partially balanced by its almost perfect durability, which enables us to utilise a greater proportion of its ultimate strength than is the case with more perishable materials. But in all cases where severe stresses and the dead weight of long spans are involved it is useless to expect from it the same strength that we obtain from wood or steel at the same cost.

There are, however, situations where it would, for other reasons, pay to use the weaker material. When properly designed and properly made in situations where it is suitable it is rot-proof, vermin-proof, fire-resisting, almost water-proof, and grows stronger with age instead of decaying. It can also be readily moulded to any given form, and in entire structures it is wonderfully monolithic, a very considerable advantage on bad foundations. But at the same time it is not a material to be used without accurate knowledge of its limitations. It must be designed with skill, made with more than customary care, carefully nursed during its infancy, and protected during the whole of its lifetime from agencies which are deleterious to cement, such as impermeating oils and acids. In some cases these disadvantages are immaterial, and it is the peculiar province of the surveyor to estimate them.

In all situations where plain concrete, brickwork, or masonry would customarily be employed it can be expected to do the same work with far less bulk of material. But, on the other hand, its use invariably entails extra expenditure in casing, which may or may not outweigh the saving of material. A retaining wall, for instance, in reinforced concrete will do the same work as a solid brick or concrete gravity wall at a fraction of the cost, but in ordinary dwelling-house solid walls, where there is not much thickness which can properly be saved, reinforced concrete and its casing must be expected to prove more expensive than brick or stone. . . .

Reinforced concrete suffers, and suffers badly, from the incubus of tedious and intricate calculations, and it is pleasant to be able to say that the results given by all formulæ can be plotted to curves. When these are drawn to large scale the slightest inaccuracy in calculating them is seen in some irregularity in the sweep of the curve. When they are used instead of the formulæ the designer's task is reduced to that of selecting values from a set of diagrams, in precisely the same way that he now selects a joist or the properties of a stanchion from a table of British rolled sections.

In my own office we have almost completely eliminated the necessity for using the long standard formulæ, having plotted them all on diagrams. The saving of time and trouble effected by their use is enormous, but what is far more important is the notable gain in accuracy. If a draughtsman has a long and intricate formula to work to, the chances of error are far greater than if he has merely to take a value from a plotted curve. Another important and unexpected advantage which results from the substitution of curves for tedious mathematics is the rapidity with which the designer can grasp the possibilities of a problem, can compare reinforced concrete with other materials, and, if it is found suitable, select the particular form in which it will give the results which combine efficiency and economy. In a material which has a high ratio of dead weight to strength it is frequently only possible to secure a proper factor of safety by eliminating all superfluous bulk. . . .

The necessity for skilled labour in the workman and highly skilled intelligence in the foreman is so often advanced as an argument against the execution of work, otherwise than by a specialist firm, that I would venture to draw attention to a few practical points upon which this argument is largely based. They are seldom emphasised in text-books, and, being comparatively immaterial in the making of plain concrete, their vital importance in reinforced work is apt to be overlooked.

Materials.

The stereotyped clause that "all materials should be the best of their respective kinds" is not one to be lightly interpreted. They must be of the very best. If the sand requires washing it is far better out of the work altogether. Washing often removes those finer particles which are essential to a strong, dense mixture. The aeration of cement should never be necessary. If it is of the proper quality and sufficiently ground it will have been properly aerated by the manufacturer, in which case further aeration will only tend to render it inert. Even if kept too long in sacks it will be found to cake. Cement should be slow or at least medium setting, and should pass the British standard tests. It should be recollected that comprehensive cement testing can only be carried out by an experienced specialist in a properly-equipped and properly-constructed laboratory. It is generally better to have the guarantee of a first-class manufacturer, supplemented by crushing tests on concrete cubes, than to trust to testing deliveries on the site. Unless the tester is experienced and his testing-room perfect, he must expect erratic results if he attempts anything beyond the simple tests for fineness and setting. The aggregate should consist of large, small, and medium-sized particles, the largest of which will easily pass between the reinforcing bars.

Grading and Proportioning.

The presence of small voids in ordinary concrete may be quite harmless, but in reinforced concrete every effort must be made to eliminate them by careful mixing and thorough tamping. They may be the means whereby damp may enter and rust the rods, causing them to swell and burst off their cover. In beams there are high stresses concentrated on very small areas of cross-section, in which the presence of a void may be very serious. Voids may also interfere with the adhesion between metal and reinforcement at a vital point. It is therefore necessary to fix the proportions of the aggregate, sand and cement, with some care, so that the interstices of the larger materials may be exactly filled by the smaller and a thoroughly dense mixture secured. The deliveries of aggregate should be tested from time to time, and if necessary the proportions should be varied. The amount of smaller material necessary to fill up the voids in larger aggregate, and the proportion of voids in sand which must be filled with cement, can easily be obtained by placing a measured quantity of the larger material in a water-tight vessel and filling in measured quantities of water until it becomes water-logged. For all practical purposes this can be done as accurately by an intelligent ganger with a pail and a pint pot as by a chemist with accurate measuring instruments and the whole of the metric scale at his disposal. The shrinkage which takes place in the volume of material when wetted must be remembered when estimating the volume necessary to fill the interstices of material of larger size. Ballast aggregate should never be assumed to possess the correct amount of sand. The latter should be screened out and the correct proportion added back.

Steel.

There are on the market many types of patent reinforcement and varieties of hard, high carbon steels. The advisability of adopting any of them in a given situation is a complicated question. For ordinary work ordinary merchant bars of British standard steel are difficult to beat.

Bending.

If reinforcements are, as they should be, kept as small as possible, all ordinary bendings can be done on the site by means of bending irons and a few iron pegs fixed into a wooden balk. The only machine necessary for ordinary work is an efficient pair of shears. Loose scale should be cleaned off with a wire brush, but a slight coating of rust is not disadvantageous.

Casings and Falsework.

These should be made of stout, well-seasoned wood put together with a view to stolid firmness whilst the concrete is setting, and afterwards coming away easily without jarring or hammering. Unless concrete is kept absolutely quiet and still until it hardens, the process of setting will be seriously interfered with or arrested altogether. For this reason the ideal connection for casings consists of outside bolts and straps, but the next best method is by square-cut nails with the heads left projecting ½ in., so that they can easily be drawn by the leverage of a claw-hammer or a split crowbar. Screws are apt to rust in badly, however well they may be greased. It generally pays to plane such parts of the casing as come into contact with the concrete, so that it will come away easily, leaving a smooth finished face. With the same object in view the

forms are sometimes oiled. This should be done with care. The oil should be thin and allowed to dry. Most fats and oils are deleterious to cement, but are especially so when the concrete is green.

Mixing and Placing of Concrete.

In all cases where the concrete will be heavily stressed in compression it pays to use a rich, strong mixture (say, 1·1½·3) rather than to make up the deficient strength of a weaker mixture by means of compressive reinforcement, which must always be expensive and uneconomical. When the mixing is done by hand the sand and cement should be thoroughly mixed first until the colour is a uniform grey, then the aggregate should be added and mixed, and finally the water in measured quantity, the whole being then turned over until it is of uniform consistency. Machine mixing should combine a tipping with a rotary motion, unless the rotating drum is provided with inside blades. A very simple and yet very efficient mixer is a large wooden barrel with a hopper door formed in one end. The barrel is filled about half full or less, the hopper door is closed, and the barrel rolled along to where the concrete is required, the tapered ends giving the necessary combined pitch and roll to the contents. Experience will soon determine how far the barrel requires to be rolled before the contents are ready for the large aggregate and for the water to be added, and the measuring stations for these are arranged accordingly. The forms and centering should be thoroughly drenched (not merely wetted) before the concrete is filled in.

Nursing of Green Concrete.

It is impossible to overrate the importance of keeping the concrete thoroughly wet and perfectly still until setting is complete. It should be kept watered and protected from drying winds and sun for the first week or ten days of hardening, and it should be somebody's particular duty to see to this over week-ends and holidays. All sawdust from the making of forms should be carefully preserved for spreading over floors as soon as the surface is hard enough.

Test Cubes.

In all large work small test cubes of concrete should be made from each batch of concrete, tamped to the same degree as the concrete in the work, kept under the same atmospheric conditions, and tested by crushing. Cubes of 4-in. side or 6-in. cylinders are usually specified, but it is not easy to construct a machine which will crush these. It is far better to have plenty of 3-in. cubes crushed on the site by a simple lever testing-machine made of 11-in. joists than to send, at considerable expense, one or two 6-in. cubes to be crushed at the nearest town which possesses a 50-ton testing-machine. All the foregoing precautions are comparatively simple. Usually the difficulty is to get workmen to appreciate their importance. It is a good rule to have one person responsible for each particular matter which needs looking after, provided with clear typewritten instructions as to what he has to see to, and a definite penalty awaiting any carelessness. If the work is small, possibly one man can look after everything, in addition, perhaps, to doing part of the work himself; but two men should never share any one responsibility, however insignificant. Sooner or later both will overlook it and blame the other. We may, however, conclude that if clear large-scale drawings in sufficient detail are supplied to the foreman, with carefully-drawn-up instructions, there is no need to consider the necessity for skilled labour to be a matter which should weigh unduly against the use of the material.

The chief points in favour of reinforced concrete are :—

(1) Its freedom from decay and its improvement with age; (2) its impermeability, which prevents insects and disease germs from harbouring in it; (3) its monolithic character.

Its chief disadvantages are :—

(1) Its costs; (2) its weight and bulk for a given degree of strength; (3) the difficulty of making alterations in it or of strengthening parts which prove to be weak.

Upon these general considerations it is possible to form a general opinion as to whether in any given situation its use would probably prove advantageous or the reverse. It should be expected to show advantages in efficiency or economy, or both, in situations where :—

(A) Fire risk is a predominant or an important consideration.
(B) Repairs and renewals are expensive, inconvenient, or difficult, or where neglected or unperceived decay is dangerous, as in sea reclamation works, reservoirs, storage tanks, etc.
(C) Where a hard, impervious surface, which can be readily cleaned, means money in the long run, as in the walls, floors, and fittings of farm buildings, and especially of dairies; in storage tanks, grain stores, silos, etc.
(D) Where it can be substituted for plain concrete or thick masonry, as in retaining walls, foundations, rain-water tanks forming the roofs of dairies, water-towers, and above-ground ensilage silos.
(E) Where considerable repetition reduces the cost of centering and falsework, as in piggeries and cowhouses, and their fittings, mangers, troughs, etc.
(F) In large complete buildings of a straightforward character, such as storage warehouses, especially on poor foundations.

It would be handicapped by its weight, bulk, cost, and by its permanent character where :—

(A) Long spans or heavy loads are involved.
(B) Where steel or timber can be used for the same purposes without disadvantage.
(C) Where the work is small, and there is little or no repetition to enable casings to be reused, as in single cottages.
(D) Where the finished details of the work are not or cannot be settled, or where a building is only required for a few years. Cutting or altering a reinforced building, or pulling it down for re-erection elsewhere, are all but impossible. . . .

The Application of Reinforced Concrete to Rural Housing.

I have been asked to discuss the possibility of using reinforced concrete to solve some of the difficulties of building inexpensive cottages in rural districts. . . .

There can be but little doubt that a cottage built in reinforced concrete in the form in which we are accustomed to see it in warehouses and office buildings (a form which has been evolved with a view to securing economy with efficiency) would be so expensive in first cost that it would compare very unfavourably with sound construction in brick, masonry, and wood; whilst the saving in fire insurance and repairs would be almost negligible, at any rate for some years. The use of reinforcement could only be justified by making the walls thin; and reinforced concrete buildings with thin walls are by no means easy to warm properly in the winter. Add to this the fact that such cottages would also be, in all probability, supremely ugly, and it may be fairly concluded that the ordinary constructions of walls, floors, and roofs in reinforced concrete is not likely to aid the solution of the difficult and complex problem of rural housing. There are, however, other ways in which the properties of cement concrete and the particular advantages of reinforced concrete can be enlisted.

The manufacture of large hollow cement concrete building blocks by means of hand machines, which any intelligent labourer can operate, is becoming a well-established method of producing a cheap and efficient material for the building of walls. Being hollow, these blocks can be handled in large sizes, which reduces the joints and the upkeep in pointing. The internal air space also greatly aids their heat-insulating properties. As regards appearance, they can either be made to imitate stone or be rough-cast, and they can be either plastered inside or pointed, distempered, or painted. They can be made in slack times and stored until thoroughly hard and mature. Not being reinforced, they form simply a substitute for brick or stone, and the question as to whether in any given locality their use would materially reduce cost depends upon the cost of brick or stone in that locality, which is a matter for local consideration.

Probably in all situations other than those in the immediate neighbourhood of brick-fields and of quarries of good building stone the balance of first cost would be in their favour.

As regards reinforced concrete proper, I have no brilliant scientific solution to offer, but I venture to suggest that if we study rural housing as practised some 500 to 600 years ago in the light of modern experience of reinforced concrete in farm buildings, there are substantial savings to be made by the new material over the cost of ordinary modern construction in brick and stone, without affecting, but rather improving, the health and comfort of the inhabitants of the building, and without transgressing any reasonable by-laws. . . .

The modern house consists of walls built up from continuous foundations, and strong enough at all parts to withstand any ordinary or even extraordinary loads which may be imposed upon them from floors and roofs. We therefore start off with a structural scheme which is carelessly wasteful, using the same strength of walls everywhere, whatever their load, and keeping out the weather and damp with a porous material of poor insulating qualities against heat and cold, and possessing a very large number of joints. The builders of the old houses first constructed a skilfully-designed skeleton of hard timber to carry the loads, with the weight concentrated on posts let firmly into the ground. This skeleton they then filled in with plaster or clay, reinforced with wattles, often plastered or rough-cast outside. Such methods would horrify a modern District Council. . . .

Our modern methods of building are the natural outcome of the almost superstitious reliance upon rules and fashions which followed the introduction of the classic Renaissance, and has remained with us ever since. If we can only go back to the sturdy structural intelligence which regulated design before it became fashionable to copy foreign buildings, we can certainly hope to use our material with efficiency and economy.

We cannot expect to be allowed to build nowadays with timber framework, nor to use reinforced mud filling, but we can certainly construct large corner posts very easily and very cheaply in reinforced concrete, and after letting them into the ground we can, by means of square trough casings, which can be reused many times, cast beams between them all round at the first-floor and at the roof level; forming, in fact, a framed skeleton similar to that which mediæval builders constructed with oak balks. As we frequently build such frames to-day in reinforced concrete to carry the enormous weight of water-tanks, they are surely good enough to carry the floors and roof of a cottage. The filling material, which would stand on the 6-in. site concrete, can be constructed in many ways which would be quite as weather-proof as a 9-in. brick wall, would give far better insulation against heat and cold, and, what is by no means unimportant, would cost much less. For instance, double concrete slabs with mesh reinforcement and straining wires could be cheaply made and stocked either by a country builder or by estate workmen in slack times, and fixed with an air space between. This is a well-known and well-tried form of construction. Another substitute for the old wattle and daub would be a method which is somewhat largely adopted in America, viz., the reinforced concrete skeleton walls could be filled in with a timber framework creosoted or treated against dry-rot. This framework, which incidentally forms the door and window frames, is covered on the outside either with thin reinforced slabs screwed on and rough-cast or merely pointed, or with deeply-ribbed, expanded-metal lathing rendered with fine concrete about 2 in. thick, forming, when set, a strong weather-proof reinforced outer skin with no joints. The inside face is either plastered or boarded, and the whole forms a very inexpensive yet a very efficient hollow wall, fire-resisting, weather-proof, and of good insulating properties.

Another simple but rather more expensive hollow wall filling can be made by two thicknesses of brick on edge, bonded by occasional headers. The chimney breasts and stacks would still have to be built in brick, but the fact of their being grouped together in one stack in the centre of an isolated cottage, or forming part of the party-walls of a group, is rather an assistance to planning than otherwise.

It will be seen that this method of utilising the characteristics of reinforced concrete to reduce the cost of rural housing by no means involves the terrible monotony of the American "poured" house, whose chief merit is apparently that some hundreds of precisely similar cottages can be constructed from one set of iron moulds. On the contrary, by going back to the traditional methods of skeleton-frame construction, the

designer is far less hampered in detail than with brick or masonry walls. For instance, the old-fashioned overhanging first floor, giving additional bedroom accommodation over a shady porch below, would rapidly spring into favour if such obvious structural facilities for it were provided, as would also many similar picturesque features which to-day we reverence so deeply, but which had their commonplace origin many centuries back in the dictates of structural necessity and economy.

The cost of 9-in. external walls to a pair of small semi-detached brick cottages, such as we try to build for £300 a pair and so seldom succeed in doing, may be taken as forming a rectangular block about 35 ft. by 20 ft. and about 17 ft. 6 in. high from the ground level to the eaves. With ordinary doors and windows these walls would cost about £113. The same walls formed of corner posts connected with transverse beams at the first-floor and roof level, all in reinforced concrete, and filled in with slab or similar double filling, resting on the 6-in. concrete over the site, would cost about £50, representing a saving of £60, or £30 a house, irrespective of the saving of door and window frames and the availability of the concrete casings for reuse. It is sound orthodox construction in reinforced concrete involving the minimum of expense in casing, and is as applicable for single houses as for pairs and groups. I cannot point to any cottages actually so constructed, but post and filling walls in reinforced concrete have been applied with considerable success in farm buildings. I submit it for your consideration as one way in which the new material can properly be called upon to effect in rural housing at least part of that saving in cost which is almost invariably so highly essential and at the same time so difficult to effect. . . ."

In proposing a vote of thanks to the author,

Sir Henry Tanner

said the paper was really a practical exposition of the advantages of reinforced concrete. The matter was surrounded by mystery by reason of the elaborate formula which had been drawn up in regard to it, and also by the fact that the idea had been promoted by specialists who wanted to keep the whole thing in their own hands. Education, however, was getting far more extensive, and all the technical schools of note were treating the matter in some form or another. Something had been mentioned about the adoption of the R.I.B.A. rules instead of the London County Council regulations, and he thought the reason was because the former was more capable of alteration or relaxation according to any local requirements. There was one great advantage with reinforced concrete which nobody could overlook, and that was it improved with time. From personal experiments he had found the cubes have a greater tensile strength after five years, which was not the case with steel and other methods of construction. He agreed with the speaker as to the advantage of simplicity in construction. In his opinion they ought not to use anything more than round rods. Turning to small buildings, such as cottages, etc., he did not think reinforced concrete would in any way solve the difficulty of providing small, cheap dwellings. Ordinary concrete was better for small cottages, and builders would be able to put them up much cheaper if they only constructed them of one floor. Then again the walls for cottages did not want to be more than about 5 in. thick; that was ample to keep out the cold and to give sufficient strength and durability. He had been engaged in a large amount of Post Office works, and although several of the walls were 17 ft. high, they were only about 6 in. thick. As to fire-resisting qualities, there was nothing to equal reinforced concrete, and for fireproof warehouses, etc., nothing better could be adopted. In connection with the making of reinforced concrete very careful supervision of the men was necessary, as they might leave out something very important. He knew of one whole slab where the steel was left out. Then with regard to alterations, he would point out it was rather difficult to cut about a reinforced building with steel rods interspersed in all sorts of places. It was no good, however, for temporary buildings, as in these cases the material was as often as not required for re-using, and with cottages it was best they should be constructed of the materials which were close at hand.

Professor Henry Adams,

in seconding the vote of thanks, said it might come as a startling announcement that a reinforced concrete beam was not so strong as a timber beam of the same dimensions. They were rightly entitled to assume, however, that there were several strong advantages to be derived from reinforced concrete. He knew of several instances where it had been in use for over fifty years and showed no signs of wear at all. For the purpose of closely examining the claims of reinforced concrete the Concrete Institute sent several members over to France, and their report on the system was extremely good. The author, he noticed, rightly pointed out that comprehensive cement testing should be carried out by properly qualified chemists. He had seen cement rejected by an inexperienced assistant, which was very unfair to the manufacturers. In using reinforced concrete it was essential that every part should be done properly at first, as it was most difficult afterwards to effect alterations or improvements. Although it might not be the absolutely best material for constructing cheap cottages, yet at the same time there were many things for which it could be used on an estate.

Mr. G. Northcroft

said he was inclined to think the paper, in dealing with cottages, did not make itself quite clear, especially in regard to cost. The American system of building was coming into vogue very much, and they were getting accustomed to it, but personally he did not think that type of building had found its satisfactory expression in English building. He did not understand the statement by the author that there would be a saving of door and window frames if reinforced concrete was used.

Mr. Munby

said he was struck with the absence of mathematics, which no architect wanted at all. He should have liked to hear more about the aggregate of concrete which was proposed to be used. Thames ballast differed from other sorts, but he did not know whether it was possible in these days of cheap high pressures for Thames ballast to be reduced to a substance comparable with ordinary slag, as the extreme roundness of Thames ballast was a very different matter when using it for concrete construction. In the construction of swimming baths and things of that sort, which he had supervised, he had found reinforced concrete of great advantage—for one thing it gave a very nice surface for finishings. The question of waterproofing was one of the great things they had to face in the future.

Mr. Horace Cubitt

said he could not help noticing the impartial way in which the paper dealt with such a technical subject. The point which might have been mentioned a little more, however, was that of maintenance. In that respect reinforced concrete seemed so much better than everything else. He had noticed that in every case where railway engineers had been able to get headroom they put a brick arch instead of a steel one. He imagined if they had to construct those arches again that reinforced concrete would be used in every instance. It required no painting and no attention and would stand, so far as they knew at present, for over fifty years.

Mr. F. Assiter

said the paper would have been a little more useful if the reader had told them more about the formation of concrete, and particularly with regard to the nature of the aggregate, which latter was a very important matter in connection with reinforced concrete. They had always looked upon Thames ballast as a very fine aggregate for ordinary ballast, but generally its roundness was against its being used for work in the air. The material ought to be crushed. At the present time he was constructing a building for the accommodation of explosives, and for that reason reinforced concrete was being used, as in the case of an accident it was blown up easier, and there was not so much danger of pieces of masonry flying about in the air.

The vote of thanks was carried.

In reply, the lecturer said the question of an aggregate was extremely difficult, but it was essential that everything should be crushed. In ordinary structures they did not use more than about 10 per cent. of the total strength of timber, and thus wasted a good deal of useful strength. In reinforced concrete, however, nothing was put away for depreciation

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THE CONCRETE INSTITUTE:
PROPS AND BEAMS IN MINES.

A MEETING of the Concrete Institute took place on the 27th ult., at which a paper was read by Professor Stephen M. Dixon, M.A., M.Sc., M.Inst.C.E., M.C.I., Professor of Civil Engineering at Birmingham University, entitled "Props and Beams in Mines." Mr. E. P. Wells, J.P., President of the Institute, was in the chair.

The following is an abstract of the paper:—

"Reinforced concrete is very little used underground, and doubtless there are economic reasons for this, but the use is growing, and on many occasions, when I have been testing columns and beams reinforced in the usual way, mining engineers who were present at the tests have said that doubtless within a few years the use of reinforced concrete in mines will become more general. The use of reinforced concrete is becoming general for pithead works, such as bunkers and hoppers, and in a few mines in Great Britain it is used on a large scale below ground, some of the principal pits being Baggeridge, near Dudley; Sneyd, near Stoke-on-Trent; and Tunnel Pit, Haunchford, near Nuneaton.

Plain concrete is not used in mines to the extent which engineers who work above ground would anticipate. Of course, one reason for this is that time is an all-important quantity in mining, and the methods in use at the present, which give the full width of the roads immediately they are timbered, seem preferable to those methods which need temporary support, blocking the narrow roads for considerable periods. But by the collaboration between the reinforced concrete specialist and the mining engineer special means will be found to meet the special requirements, and so an immense field opened for the use of reinforced concrete.

The ingenious methods of using timber, one of the most valuable materials of construction even now, have been so successful in the past that it may need a good deal of argument to convince the mining engineer generally that even in some cases a comparatively new material like reinforced concrete may be an economic and useful substitute. To the miner the use of timber is now instinctive, and the many changes in his work necessitated by the adoption of concrete and reinforced concrete seem irksome to the greatest degree. The engineer is also to blame in some cases, because, without studying the special conditions, he merely aims at substituting one material for another which, owing to years of experience, is being used in the forms to which it is most adapted.

We find in some cases engineers who use reinforced concrete paying too little attention to the form of the design, and to a large extent imitating structures in steel and wood or even masonry. Without doubt in some cases this may be necessary, but in many cases it could be shown that economy would be obtained by using the material in the special forms to which it is adapted. To a very limited extent, therefore, do I anticipate that beams and posts of reinforced concrete will be used in mining as substitutes for timber, but after a complete study of the possibilities it ought to be possible to design some really efficient substitute for timber in many cases.

Of course, it is only in main roads and permanent work in mines that it is anticipated there will be any extensive use of reinforced concrete work. The method of using timber in these places is well known. The roof is supported on head trees, the ends of which are carried on props, which, sloping outwards at their feet, are also used to carry, when necessary, the sides of the heading. While, therefore, within limits, the top and sides of the heading are supported under considerable pressure, the floor must be continually rising and thus requires continual attention, while gradual settlement of the whole heading takes place.

Experiments show that the existing strength of a larchbar should not be assumed to be more than 1,780 lb. per square inch, which will certainly be less than a well-made reinforced-concrete post four months old. Besides, in a

mine dry rot quickly attacks timber unless constantly wet.

The cost of timber for mine work is continually increasing, the price of foreign timber having risen as much as 45 per cent. during the last five years. For many reasons, therefore, substitutes have to be found for timber for main roads where the work is to be of a permanent character, and we find that the use of steel joists is very usual. Joists are used instead of head trees, and at the ends a clip on the lower flange affords a simple and effective method to keep in their proper position the joists used instead of the side props. If the roof needs support between the joists, timber is generally used, whereas concrete is sometimes used between the joists at the sides. It is evident that reinforced concrete slabs with rock packing or concrete filling if excessive loads are expected, might be most effectively used in conjunction with joists.

These methods of supporting the roof and sides, as pointed out before, can only be regarded as of a semi-permanent nature, since with great pressure settlements must take place. An invert is really needed, and so we find that in many cases the main roads consist of tunnels completely lined with brickwork.

When reinforced concrete slabs between steel joints are suggested for the roof and walls, it is natural to think of reinforced concrete beams and posts or reinforced concrete T-sections. As already pointed out, it is improbable that posts and beams will be much used when reinforced concrete is employed at a large scale in mining work. But experimental work will be useful, as these structures will most probably be used in positions where the maximum load has to be supported by the structures as soon as they are in place. No doubt one of the chief reasons why concrete has not been used in mines is that it takes a considerable time to attain its ultimate strength. It is possible, therefore, that a method of supporting main roads in which can be used posts, beams, and slabs, manufactured and stored for at least six months, will be found economical in some cases.

Professor Dixon then gave detailed particulars of tests he had conducted on reinforced-concrete pit props, beams, and arches, and referred to examples of the practical application of reinforced concrete to underground work, expressing in conclusion the opinion that, with such examples and many others, it seemed evident that reinforced concrete will have an extended use in the future for main roads when the pressures are great."

The reading of the paper was succeeded by a discussion in which the following took part:—Messrs. Frederick Purton, E. Fiander Etchells, S. S. Rogers, W. G. Kirkaldy, W. Cyril Cocking, William Lucas, R. H. Lee, and Major H. S. Rogers; Professor S. M. Dixon, M.A., M.Sc., and the President.

CONSTRUCTION OF ENGINEERING WORKSHOPS.

ARCHITECTS who are called upon to undertake the design of workshops may study with advantage the paper of which a brief extract is given below. The communication in question was read by Mr. H. N. Allott, M.Inst.C.E., to the Manchester Association of Engineers last month, and, in accordance with the suggestion of the President, the author confined attention chiefly to the case of a shop of moderate size arranged on one floor, having along one side small bays for light machinery and fitting work, and larger bays for heavy machine tools and erection purposes.

The design lends itself to extensions at either end, the heights being 30 ft. for the heavy machine and erection shops and 15 ft. for the light machine and fitting shops. For bays of not more than 25 ft. wide a saw-tooth roof is recommended, but as the width is greater the increased length of the glazing bars necessitates a centre purlin and greater strength in the rafter back. The roof principals should be arranged at right angles to the length of the shop to facilitate the installation of shafting, pipes, and conduits. The author favours asphalt felt laid on grooved and tongued boarding as the best roof covering, being cheaper and less liable to injury than slates. The best system of glazing consists of steel bars with lead covering to form weather-tight joints. For roofs up to 50-ft. span the economical spacing may be taken at from 10 ft. to 12 ft., which allows angle bars to be employed for purlins. In roofs of larger spans it is often more economical to space the principals farther apart and to use purlins of channel, Z, or I section. In shops where the stanchions are not spaced more than 25 ft. apart, a rolled steel I-beam is usually sufficient for roof girders, a lattice or plate girder being required for longer spans. Among other topics discussed were methods of floor construction and means of supporting shafting and power transmission appliances.

CONSTRUCTION NOTES.

Tests for Carbon Monoxide. Two methods of detecting carbon monoxide in the air of buildings were described a short time ago in papers read to the Académie des Sciences. The methods in question are briefly described below.

Gautier Test.—The apparatus comprises an aspirator with a capacity of 3 litres, whence the air collected is passed into a vessel containing iodic acid maintained at a temperature of 70 deg. C. The iodine liberated by the action of carbon monoxide is passed into a tube containing chloroform, which is thereby tinged pink. The depth of the tint is compared with that of the chloroform in tubes containing various weights of iodine, corresponding with definite proportions of carbon monoxide in air. The test is said to be so delicate that even so small a proportion as one part of carbon monoxide in 200,000 parts of air can be readily detected.

Guasco Test.—The apparatus consists of a Leslie differential thermometer, one of the two bulbs of the U-tube being coated with platinum black, which absorbs carbon monoxide with the evolution of heat. The two bulbs are enclosed in an outer cover to prevent direct contact with the atmosphere, but air penetrates the casing by osmosis. Any change in the level of the liquid in the bend of the U-tube can be at once noticed, and the proportion of carbon monoxide in the air can be read by the aid of a specially graduated scale.

New American Specifications for Structural Steelwork. A PUBLICATION recently issued by the American Bridge Company comprises specifications for the steelwork in structures other than bridges. While embodying most of the customary requirements, the specifications contain various innovations worthy of consideration, particularly the establishment of lower values for wind pressure, reduced unit stresses for compression, and the demand for the specially careful design of compression members.

New Thames Bridges at Reading. ONE condition attaching to the incorporation of Caversham with the Borough of Reading was that the last-mentioned town should repair and widen Caversham Bridge and build a new footbridge across the Thames at De Bohun-road. After due consideration, it was decided to ask Parliament for powers to reconstruct Caversham Bridge and to build a new highway bridge at De Bohun-road, instead of a footbridge.

Caversham Bridge now crosses the river in four 62-ft. girder spans with one 42-ft. 9-in. span of the same kind over the eyot. The girders are of the lattice type, and supported on hollow iron columns of 2 ft. 6 in. diameter, the interior of the columns being filled with concrete. Like many other iron structures of the same age, this bridge is in an unsatisfactory condition, and scarcely safe for heavy modern traffic.

The new bridge will cross the river in two steel arch spans of 130 ft. each, and will give the width of 45 ft. between parapets instead of 30 ft. as in the case of the existing bridge. Other improvements projected by the designs are the reduction of the roadway gradients from 1 in 21·5 to 1 in 22·6, the increase of clearance under the bridge by 1 ft. 9 in., and the provision of a direct route for the towing path by the construction of an archway through the Reading abutment.

The new bridge at De Bohun-road will cross the river in one span of 190 ft., consisting of two braced cantilevers 32 ft. deep at the piers. The roadway will pass between these, and the footpaths will be carried on external cantilevers, the total effective width of the bridge being 40 ft. The abutments will be of concrete faced with stone, and flood arches will be provided in the Caversham approach.

Safety in Derrick Work. IN the course of an address delivered by Mr. Frederick Tench, of New York, the design, erection, and employment of derricks in structural work were discussed at some length. It was pointed out that accidents in connection with this class of appliance are due not only to the use of imperfect derricks, but also to the improper use of good derricks. Inadequate guying, insufficient anchorage of the stifflegs, sudden strains occasioned by slipping loads, and neglect of lubrication are things to be carefully avoided.

An Experimental Road. A ROADWAY, 3,000 ft. long, between Sacramento and Riverbank, in California, was constructed last autumn by a company owning large areas of land, for the purpose of ascertaining the most suitable and most economical form of concrete paving for adoption in the district. Ten different varieties of this paving have been laid experimentally, and it is believed that the fairly uniform temperature prevailing in California will obviate the difficulties usually arising from the expansion and contraction of the concrete. The road was constructed under the supervision of Messrs. Haviland, Dozier, & Tibbetts, consulting engineers, of Sacramento and San Francisco. The idea is one that might be copied with advantage by highway authorities in this country.

Air Currents and Acoustics. AN article by Professor Watson, of the University of Illinois, in the *Engineering Record*, deals at some length with the relation of air currents to the acoustical properties of auditoriums, and applies the main conclusions of the author to ventilating systems. From the experiments conducted by Jacques, Tyndall, Sabine, and the author, it is clear that sound waves impinging on the boundary between two gases suffer reflection and refraction to an extent governed mainly by the difference of density of the gases. The difference of density, in turn, depends upon the difference between the temperature of the gases, or the amount of moisture contained, or upon the different nature of the gases. Many of the common effects of currents on sound may be explained by these considerations. It is shown also that haphazard air currents in an auditorium make the hearing confused and indistinct. In applying his conclusions to systems of warming and ventilating auditoriums the author recommends that stoves, radiators, and hot-air registers should always be placed near the walls so that no currents of hot air may come between the speaker and his auditors, and for the same reason it is desirable in theatres to substitute electric lamps for gas lights in the footlights. Ventilation has practically no effect on the acoustics of a building unless the air currents are haphazard. It is not to be concluded that poor acoustics can be greatly improved by a ventilation system, but it is clear that poor acoustics may be made worse by unsteady currents of air with many boundaries between hot and cold layers.

Smoke Abatement in Chicago. A BULLETIN issued by the United States Government accords high praise to the fight made by Chicago for the suppression of the smoke nuisance. The campaign there in progress is the result of the Committee of Smoke Abatement and Electrification, formed by the city authorities, the railway companies, and the Association of Commerce. Although an immense amount of smoke is still emitted from all sorts of furnaces in Chicago, the bulletin says that "there is certainly no other American city that has made such marked progress toward the scientific solution of the smoke problem." While data are not available for precise comparison, the latest reports of the Chicago smoke inspectors show gradually reduced averages of smoke production. The method of inspection adopted is to station observers at an average distance of half a mile apart along any line under observation at a particular time, every effort being made to keep the users of furnaces in ignorance of the fact that observations are being made. Records are taken every minute of each chimney in sight. The gradual reduction of the smoke nuisance is attributed in large measure to the improvement of boiler furnaces and the adoption of such improved appliances in factories and public buildings.

THE BUILDING TRADE.

THE CLERK OF WORKS AND THE CONTRACTOR.

FEW questions connected with building are more difficult to settle satisfactorily than that connected with the employment of a clerk of works on contracts of moderate size. It is obvious that if it is necessary to watch any work continuously in the employer's interest it is necessary to watch all work continuously unless it is in more trustworthy hands. If we assume that a contractor cannot be trusted to mix mortar or concrete in the proportions specified when carrying out a large contract we may be sure he will not be more trustworthy when carrying out a small contract. In either case the quality of materials is equally important—if anything it is more important in a small contract, as there is presumably less margin; by which we mean a closer approximation to the minimum requirements demanded by safety or for purposes of protection from weather.

Yet in the one case the employment of a clerk of the works is all but universal, in the latter it is unusual; but in each case the amount of actual supervision which an architect can be reasonably expected to give remains the same.

The duties of a clerk of the works, however, on a large job, while they are mainly concerned with seeing that materials and workmanship are what is specified, include and necessitate much greater watchfulness in order to prevent misunderstandings as to the meaning of drawings and specifications, and in many cases a considerable amount of knowledge of special systems of construction and the use of patent appliances.

The duties devolving on the clerk of the works on a large job, however, require a much greater amount of knowledge, especially of the meaning of drawings, than is the case on a small job; in the one case supervision is almost everything, in the other supervision of work and interpretation of drawings are almost equally important.

It is a curious result of the usual system that the architect has very frequently far more trouble in the supervising of a small than in the case of a large contract.

In a small contract, when a clerk of the works is employed he is frequently paid little in the way of salary, and such a man is often of little use, as it is natural for the best man to seek the larger jobs and higher rates of pay.

The clerk of the works on such jobs is frequently either a nonentity, who takes his pay and does little for it, or in other cases he may be a quarrelsome and impossible man, who tries to magnify his office by giving the contractor unnecessary trouble by his insistence on standards which cannot be reasonably demanded.

The architect is sometimes put into the position of having to quash the objections of the clerk of the works, with the result that the latter in some cases appeals to the employer, who, in many instances, thinks that he is more zealous in the protection of his interests than the architect.

We believe in the main that the employer is best advised who saves the expense of the employment of a clerk of the works on a small job, providing he will allow his architect to procure tenders from contractors who are known to be absolutely reliable. It is true he will in most cases pay more, but he will take the surest means of securing good work.

It is difficult at the outset for an architect to explain to a client whom he does not know the exact nature of the supervision which the architect may be reasonably expected to exercise, as in many cases such explanation may be taken as a dexterous way of evading responsibilities, but at the same time it is the best and safest method to adopt.

No architect can live on a building during the time of its erection, and without doing so it is impossible to be able to see everything that has been done and covered up. All that an architect can be expected to see are defects which are apparent at the dates of his visits of inspection. It is quite impossible, for example, that he should be able to answer for the proportion of Portland cement in concrete if he has not seen the latter mixed, or to be able to judge by the quality of every piece of timber concealed. As we repeat, in such cases the employment of a first rate and reliable contractor seems to us to be the best way of dealing with such cases.

We have received the following interesting communication from Mr. J. D. Crace, together with a portrait, which we reproduce, of a clerk of works well known in his day—

"In turning over old photo. portraits taken by my father (who was one of the earliest of amateur photographers) I came across the enclosed, taken about 1854-5, which I think you may like to reproduce.

It is the portrait of Mr. (Thos ?) Quarm, who was the clerk of the works throughout

Thomas (?) Quarm, Clerk of Works, Houses of Parliament.

the building of the Houses of Parliament. It is a good likeness, for I remember him well.

To have retained the confidence of every one concerned, to have faced the innumerable difficulties and changes which occurred, and to have a knowledge of every detail in such a work needed a man of no common stamp; and I think that the head well expresses a character very remarkably fitted for the position. J. D. CRACE."

THE LUMSDEN CASE.

A BUILDER erects a house in a district which, owing to his knowledge of building development, he considers is likely to be an improving district; he invests his capital in erecting it, and he uses his skill, or pays an architect to use his experience and art, to render the house attractive and likely to meet the requirements of those who will settle in that particular district. The house is valued as at April 30, 1909, and some small profit is allowed in addition to actual out-of-pocket expenses. The builder's foresight is justified; the district becomes more populated, the house meets the particular requirements of a person requiring to carry on business in the district, and a willing seller and a willing buyer in the open market arrange a price in excess of the value arrived at by valuation. This is a "fortuitous windfall," and the Exchequer claims 20 per cent. of the difference between the price paid and the original valuation, quite irrespective of any other transactions the builder may have been engaged in or other sales made by him at a loss. He has to pay on the single profitable transaction.

A person not engaged in finance and with no capital expenditure involved in financial business directs a purchase of certain stock to be made on his account. Before the stock is delivered or any money has passed a rise takes place owing to entirely outside influences. The stock is sold at a considerable profit in the open market on what the stock would have cost had the purchase been completed, and a lump sum is recovered without the exertion of any skill or the expenditure of any capital. This is not a "fortuitous windfall" or subject to any special taxation.

The builder who has made some profit and some loss, if the losses equal the gains, contributes to the Exchequer 20 per cent. on the gains; the person buying stock whose losses equal his gains contributes not one penny to the Exchequer.

The alleged reason for this distinction is that the builder has some interest in the monopoly of land, and if the land is required he must be taxed for the monopoly, but precisely the same argument applies to the buyer and seller of stocks. If the particular stock he fancies were unlimited in supply the stock would never rise. It is because it is limited that the price rises on demand and the stockholder secures a profit because he held a share in a monopoly. These facts are unquestionable, but it may be asserted they present no argument against the increment duty on land, but only for an extension of the principle to other subjects of taxation. Be it so; but is this any excuse for having selected for a novel form of taxation not those who make a profit without any capital expenditure and with no skill, enterprise, or labour, but those who can only realise a profit out of their monopoly by hazarding capital, by personal exertion, by long training, and considerable skill and foresight?

We are no advocates for special taxation on profits in any shape or form, but if such taxation is to be justified at all, surely a commencement should have been made on profits obtained where no stock is delivered, where no capital is involved, and upon transactions which can only fall within the description of "fortuitous windfalls."

THE INCORPORATED INSTITUTE OF BRITISH DECORATORS:

ANNUAL DINNER

THE annual dinner of the Incorporated Institute of British Decorators was held on Monday at the Trocadero (Oak Room), Piccadilly-circus, Mr. J. D. Crace, President, in the chair, supported by Professor G. Moira and Messrs. Cowtan, W. Hayward Pitman, J.P., Amor Fenn, W. Stewart-Greene, P. A. Jones, T. De Jong, H. N. Hornsby, A. S. Jennings, A. G. Rhind, — Sibthorpe, F. W. Englefield (Secretary), and others.

The loyal toasts having been proposed from the chair and suitably honoured,

The President proposed the toast of the "Incorporated Institute of British Decorators," which, he said, had been formed some thirteen or fourteen years, and had done some good work, but which might do more. The Institute started with the idea of promoting all that tended to the artistic side of decoration apart from the commercial side. The business side was well looked after by others, but he felt that with decoration in England it was necessary to have some body like the Institute to keep before decorators and before the public the importance of the perpetual study of the real conditions and systems of colour decoratively used. He supposed that upon the whole there was no detail connected with building that was less understood than the decoration of it. There was an extraordinary absence of a general knowledge of the subject of colour decoration, and it was largely in the hope of improving that condition of things that they had maintained and encouraged the Institute, and had taken such steps as they thought would promote its efficiency. In some respects they had been very successful, notably in their desire to help the next generation by means of the travelling studentships which they had offered. Although they must look forward to the next generation for the more complete development and attainment of their objects, they felt that the movement was a desirable and popular one. At the present time the architect, as a rule, seemed to have sunk all idea of colour and to look at buildings

in the mind's eye as they appeared on the white paper of the drawing-board. That was not what it ought to be, and it largely depended on what efforts they made, both for themselves and the coming generation, as to improvements to be made in the future. Another object of the Institute was the interchange of ideas between members, and that, he was afraid, had been very imperfectly followed, and he thought there ought to be more interchange of ideas, more subjects brought forward for discussion, and more people ready to come forward to help. In that respect the Institute had not done itself justice, but he hoped that in the next few years more would be done in that direction. Subjects were endless, if people would think of it, besides which there were the everyday experiences and incidents of their own career. Subjects, as he said, of interest to decorators were innumerable, and no one who travelled or read need fail to assist in a way which would be of interest to one another, and he made an appeal to them to assist in this direction, for in bringing forward their own views and experiences for the benefit of other people they would derive no small help themselves.

The President then proposed the toast of "The National Associations of Master Painters in England and Wales, Scotland and Ireland," and referred to the excellent work carried out by the Associations. They had not only done a great deal for the business interests of master painters, but much to promote the welfare and artistic education of the young. The membership of the Association was over 2,000, he believed, and their organisation was very complete, and year by year they had arranged congresses and meetings which had been very successful and largely attended, and had promoted a good understanding between the members. The objects of the Association were very excellent, and he wished them unqualified success.

Mr. Sibthorpe, in response, said the Associations were growing steadily with the increasing efficiency of their members. The ideas of the first members seemed somewhat sordid, *i.e.*, to promote the business welfare of the members; but they soon realised that if they stopped at that they would appeal in vain to the better spirits in the craft, and so the higher ideals to which reference had been made came to the front. If it had not been for the lead of the Scottish Association the other associations might well have remained in a somewhat sordid rut, but they were led by Colonel Bennett, the late Thomas Bonnar, and others to think of such matters as raising the standard of technical education among the boys and making them more useful members of the craft in the future. As to the higher branch of the craft represented by the Institute and its endeavour to convert the handicraft into a real living art, he should like to refer to the great part Mr. Crace had taken in that effort, and not only in his work for the Institute, but by means of his pen and pencil in the volume on colour decoration he had just published. As long ago as the day of Viollet le Duc men who were gifted to see, even though they were architects, and who could place themselves *en rapport* with the mind of bygone days, saw that there were eternal principles of eternal application lying at the root of all colour decoration, but it was left to their President to put on record some details of those guiding principles and to lay the foundation of a real appreciation of them by their application in the higher walks of the craft. Any student who had worked without the help of such a book, in solving problems of colour decoration would wonder how he had got along without such guidance.

The President then proposed the toast of "The Guests," coupled with the names of Professor Moira and Mr. Amor Fenn.

Professor Moira said they were all striving in the same direction and all fighting that one disease that had spread over the country, viz., the white paint disease. But he had very great hopes that it was being overcome, for he had seen a good many instances lately in houses, etc., where people had tried to put down the desire of architects to paint everything white, and there were a few men in the architectural profession who were employing colourists to assist them in their work, and if only a few more would take the trouble to be interested in colour the right thing could be done. They wanted educating, and they were afraid. A good many of them said that it was the fault of the client, but most clients would have whatever the architects recommended if it was recommended in the right way. He had just had an experience in regard to a stained glass window, the colouring of which was not liked by the client because he had not seen anything like it before, but he was glad to say that by persistence he (the speaker) had prevailed, and he thought that if architects could do the same they would get much more interesting work. There were a few houses in London which were decorated by Alfred Stevens, who was working for a firm of decorators at the time, and there was the work done by Sir George Frampton, and with this work in their minds there was some hope of getting rid of that terrible fashion of thinking that nothing was ever good unless it was entirely Elizabethan, Jacobean, or something of that sort. Let them go forward and do something for themselves. This was the day of the motor car and the flying machine, and it was time they and the architect should do something for themselves. He was quite sure that their Institute was doing a great deal to get the architect, and through the architect the people, to realise that London was a place which requires colour.

Mr. Amor Fenn said as to the absence of colouring from our public buildings there was a prospect that with the swing of the pendulum we should have colour again in our buildings, and it was to be remembered that the architect did not always have his own way, while there was the question of cost, and white paint was cheap.

Mr. Cowtan then proposed the toast of "The President," and referred to the great influence which the family of Crace had had on decoration for many years past. His (the speaker's) father once remarked to him that Mr. Crace's father had raised the trade of the decorator into that of a profession, while as to their President he was not only a decorator but an artist, as the portrait of his father in the Painters' Hall showed.

The President, in replying, said the Institute should aim at raising the art of the colour decorator, for it was one of the most beautiful of arts which ought to be raised to the very highest plane.

The concluding toast was that of "The Secretary," Mr. Englefield, proposed by Mr. Pitman, who referred to the excellent work which the Secretary had carried out for the last fourteen years.

Mr. Englefield suitably replied, pointing to the need for increasing the membership of the Institute, and the proceedings terminated.

BUILDERS' CLERKS' BENEVOLENT INSTITUTION.

THE thirty-fifth annual dinner of the Builders' Clerks' Benevolent Institution was held on Tuesday in the King's Hall at the Holborn Restaurant, when Mr. Roland E. Holloway, President of the Institution, occupied the chair, and was supported by Sir Walter Essex, M.P., Messrs. Edwin Brooks (the founder of the Institution), F. L. Dove, A. B. Colls, A. J. Bristow, F. Dare Clapham, Thomas Costigan, and others.

After the loyal toasts had been honoured, the President proposed the toast of the Builders' Clerks' Benevolent Institution, and in the course of his remarks said that he felt it an honour to stand before them as their President, but he regretted that the response to his appeal for the funds of the Institution had not been larger. He was pleased to say that he had received several promises of contributions, and he had no doubt that by the end of the evening quite a substantial sum of money would have been raised. He had found in soliciting donations towards the funds of the Institution that the National Insurance Act had become a useful excuse for people not giving more, but he would remind them that the National Insurance Act does not pay pensions. This Institution was founded forty-seven years ago for the purpose of granting pensions of £30 per annum to clerks, or £24 per annum to their widows, and for the maintenance and education of their orphan children, and for making grants of temporary relief. At that time the amount distributed was about £12 12s.; it was now considerably larger. There were twenty-five widows receiving £22 per year, and three aged clerks who get £25 per year, besides others obtaining relief. Ten orphans are also provided for and educated at the orphanage school, and are not only given the ordinary education, but are taught a trade in order to enable them to get their own living. There were several names on the list waiting to be voted relief from the Institution, and he would remind members that for every guinea subscribed each member was entitled to ten votes.

Mr. James Carmichael, in proposing the toast of "The Architects and Surveyors," said that he congratulated the President on the honoured position which he was occupying that evening. His, the President's, father was in the chair some years ago, and he was glad to see that a worthy son was following in the footsteps of a worthy father. As to the toast, he had no doubt that the architect found his duties very varied and difficult, and nowhere were they more difficult than in London. What with the various building rights, ancient lights, County Council by-laws, etc., the only way for the architect to get away from all these fetters would be to go to some new green pastures, which were free from all restrictions, and the only thing he would have to consider, but which he seldom considers, would be the clients' pocket. As for the quantity surveyor, he was supposed to know everything connected with building; he had got to be a walking encyclopædia in respect to building, and he would advise all architects to get a good quantity surveyor and stick to him.

Mr. F. Dare Clapham, in replying for the architects, said that he could not agree with the last speaker that the quantity surveyor knew everything; he thought that the architect was supposed to know everything. He supposed that everyone in the room knew what an architect was, but the man in the street did not know; he certainly did not know the extent of their responsibilities. This was, he thought, largely due to the fact that the ordinary layman knew nothing about architects or architecture, and he thought that the profession should have more recognition in the public press. Little or nothing ever appeared in the daily press about architecture, and the man in the street knew nothing about the design of his buildings and streets. Some time ago articles had appeared on architecture in certain papers, but these had since ceased. Architects did not want to advertise themselves, but he thought they were entitled to a certain amount of recognition. When the public press describe a new building, nearly everyone was mentioned, but very seldom was the name of the architect given. With reference to the surveyors, they had heard a lot lately about indifferent quantities. He thought that the architect ought to have a thorough knowledge of quantities, but he also thought it would be better for all concerned if they were left in the hands of the quantity surveyor.

Mr. H. B. Sanders said he did not agree with Mr. Clapham about the architects never being mentioned in the newspaper accounts of their work. When a large public building is opened, much is heard about the owners, the architects, builders, foremen, and clerk of works, but he did not remember a case in which the name of the quantity surveyor was mentioned.

Sir Walter Essex, M.P., then proposed the toast of the "Builders and Builders' Merchants," which was responded to by Messrs. Ralph Holliday and Harry Stringer.

Mr. F. S. Oldham, having proposed the toast of "The President," and a suitable reply having been made by the President, the Secretary, Mr. John Austin, A.C.I.S., announced that the subscription list amounted to £295. From past experience, however, the Hon. Treasurer, Committee, and Secretary feel assured that, from other amounts to be received later, the final sum will reach £350.

SLATE AS ROOFING MATERIAL.

ON Tuesday evening a special lecture was given by Mr. F. G. Dawson to the students of the London County Council School of Building, Brixton, on "Roofing." The lecturer had intended to deal with both slate and tiles, but time did not permit of the second part of the subject being touched on. The lecture was illustrated by numerous lantern slides, which enabled the audience to grasp the different stages of the whole industry, and particularly how both the open-air and underground quarrying operations are carried on. There were also some suggestive illustrations of the way slates are employed in Germany for roofing, and sketches showing how monotony can be avoided by using slates of different sizes on buildings.

Mr. Dawson said that, whilst slate occupied a high position amongst building materials, little attention was paid to its history, and much misapprehension existed regarding it. With but few exceptions slate was a sedimentary deposit which accumulated at the bottom of the ancient seas. For countless ages immense quantities of mud combined, and, alternating with gritty matter, were washed

by rivers from the ancient lands, and, through the medium of rivers, carried to the seas. This material resulting from the erosion of the highly refractory rocks of the Archæan period, was composed chiefly of silica and alumina. As they were carried to the sea they underwent a sorting process. The heavy particles were deposited close to the shore and the finer matter carried further out and precipitated. As a result a geographical variation in the deposit took place, and this explained the fact that while the identity of a slate deposit distributed over a wide area might be the same, its character might alter considerably with a change of locality, and whilst in one place it would give fine-grained, high-class roofing slates, yet in another a coarse, gritty, and unsuitable material was in evidence. The character of the deposit naturally depended on the kind of rock from which it was derived. In the principal slate regions of the United States deposits containing a considerable quantity of carbonate of lime were found at intervals of from a few inches to as many feet, for these occasional variations in the character of the strata usually manifested themselves as stripes or ribands of a different shade to the rest of the slate, and traversing it at different angles. In Welsh slates derived from the Festiniog or Carnarvonshire districts these ribands did not injuriously affect the durability of the slate, as they consisted of coarse yet not perishable matter, but the ribands in American slate from the regions referred to were liable to chemical decomposition under ordinary atmospheric conditions. This defect was shared by many slates of foreign origin. The colour of the deposit was largely determined by the quantities of iron and magnesia in its composition, and by the manner in which they were combined with other elements. In certain localities they found a great variety of colour, some quarries yielding blue, red, purple, and green slates within a comparatively short distance of each other. One of the principal characteristics of slate was its predisposition to split easily and naturally, with more or less true surfaces, according to the quality of the bed, and if this cleavage did not exist, it was doubtful whether slate could be utilised for the purpose of roofing, owing to the enormous cost of reducing it to its required thickness by artificial means. Few were aware of the small proportion of roofing slates obtained in relation to the total rock that had to be quarried. This varied in different quarries. In Great Britain and Ireland the yield varied between 3 per cent. and 12 per cent., the average being about 8 per cent., so that out of 100 tons of slate taken out of the earth no less than ninety-two tons, on the average, had to be thrown away as waste. A hard dense slate had to be removed by blasting, which increased the proportion of waste. Slate was quarried in the United Kingdom, Ireland, America, Portugal, etc., but by far the most important of the world's supply was Wales. The slates sold in the British market were chiefly home produced; and foreign importation had much declined. Generally, the commencement of slate quarrying for roofing purposes did not date back to a very remote period, and in the United Kingdom its history was represented by some 500 years. Documentary evidence in existence showed that slate was quarried at Angers as long ago as the twelfth century. If in Great Britain they did not hold the record in this respect they could justly claim to be the greatest producers. France was next with a production equal to about half that of Great Britain; and America was slightly less than half. The question would naturally arise as to which slate was the best. Durability was, of course, of first importance, but the definition of the qualities which conduced to durability involved problems of great complexity. The determination of the geological formation would not suffice, as slates from the Cambrian, Silurian, or Devonian formations in certain localities were perfectly reliable, yet in other localities, slates derived from the same sources might be regarded with suspicion. Chemical composition alone was insufficient to enable them to estimate the durability of a slate, for the same constituent as a component of the mineral might be quite durable, but yet be liable to decomposition in another. Generally speaking, the silicates of iron and alumina represent nine-tenths of the total mass, and might be accepted as chemically inert and incorrodible, and therefore of a permanent character. The doubtful ingredients were the comparatively small percentages of lime, magnesia, and iron in the form of sulphide. In the best slate localities they were present in combinations with silicates, and as such were quite durable, but in other localities they might be there in the form of carbonates, in which case they were liable to decomposition. While, however, as a general rule, the presence of carbonates should be regarded with grave suspicion, no hard-and-fast rule could be made, as some of the best-known English slates contained the carbonates of magnesia and lime, but yet were of known durability except under exceptional conditions, such as a chemical atmosphere. The degree of porosity in a slate was a very important factor, as, apart from the facility of chemical decomposition which it afforded, it enabled water to penetrate to the interior of the slate where it was liable to freeze and produce a disintegrating effect. A clear ringing sound in a slate was an indication of its micaceous character, but it did not preclude the presence of deleterious matter, and hence did not ensure durability. It might be a surprise to many to learn that the tensile strength of some slate was nearly equal to that of cast-iron, reaching as it did to upwards of 11,000 lb. per square inch, whilst it was capable of sustaining a weight exceeding 24,000 lb. per square inch without crushing. Deflection tests were useful as indicating the toughness and elasticity of the slate. Mr. Dawson then proceeded to describe and illustrate in a most interesting way the process of quarrying both open and underground, and showed how after blasting the slates were taken to the splitting and dressing sheds and dealt with until they are sent out as roofing slates. In conclusion he said that slate of the right quality as a roofing material was unique. It had stood the test of time satisfactorily, and proved that Nature's handiwork was ever the best. Substitutes appeared from time to time and their novelty attracted for a season, but time had not laid its testing hand on them, and therefore extreme caution was necessary lest their use brought trouble in its train. He often wondered if they were sufficiently artistic in their dealings with roofing. Continental folk made some of their roofs "works of art" by their architectural treatment, and to a certain extent they could learn of them. To see streets of uniform stereotyped houses with one unbroken stretch of slate was enough to offend the eye of even the most inartistic, but the same effect would be produced whatever was used if breaking up was not resorted to. There was no need for ties. The varieties of slates, colours, sizes, and thicknesses in existence was such that a little forethought and treatment in connection with the cheapest building would result in the obliteration of the reproach that they were a drab people in their artistic ideas. After all was said, there is no questioning the fact that a slate as a material for roofing, if properly selected, left nothing to be desired on the score of reliability and durability, as its age might be counted in centuries. It would be invidious for him to mention particular quarries as possessing slate having reliable qualities or the reverse, but he might say that Welsh slates stood permanent, and with but few exceptions were reliable and satisfactory. Experience, however, was the best teacher, and as it rarely happened that those upon whom it devolved to use and specify slate could afford the time or had the technical knowledge necessary for a scientific investigation they were more or less bound to rely upon the guidance of those who had acquired the information by extended practical experience.

GENERAL BUILDING NEWS.

WATER TOWER AT ENFIELD.

At the monthly meeting of the Metropolitan Water Board on Friday, last week, reference was made to the scheme for affording a supply of water to Botany Bay, Enfield. Originally it was proposed to erect a steel tank, but afterwards the Duchy of Lancaster, on whose land the tank was to be erected, desired that a tower be erected instead of a tank; and on designs being submitted to them for a tower to cost £450, they have suggested the erection of a tower which will cost £750, and this the Board has agreed to carry out.

TRADE NEWS.

Under the direction of Mr. Ernest J. Elford, C.E., Borough Engineer, Southend-on-Sea, the "Boyle" system of ventilation (natural), embracing Boyle's latest patent "air-pump" ventilators and air-inlets, has been applied to the Administrative Block, the Sanatorium, Southend-on-Sea.

The Drill Hall, Spalding, is being supplied with Shorland's patent exhaust roof ventilators and special inlet ventilators by Messrs. E. H. Shorland & Brother, Ltd., of Failsworth, Manchester.

PATENTS.

APPLICATIONS PUBLISHED.*

3,697 of 1912.—John Tarr: Hinges.

5,937 of 1912.—William Morrison: Domestic cooking-range.

6,148 of 1912.—Edward Frederick Stimson: Boilers for kitchen-ranges and the like.

6,270 of 1912.—Ferdinand Bohrer: Means for opening and closing windows and the like.

6,956 of 1912.—Nicholas Simpson: Water-flush cistern.

9,695 of 1912.—Charles Sudre: Process and apparatus for splitting slate blocks.

11,519 of 1912.—William Pratt: Staging for use on roofs and the like.

13,009 of 1912.—Camile Birault: Apparatus for the destruction of town sewage and refuse.

13,322 of 1912.—Ludndert Cornelius Casimirus Fukken and Henri Jacobus Johannes Berndes: Closet seats and seat guards.

17,895 of 1912.—Herbert James Beresford and John William Sleigh: Locks and latches for sliding doors.

18,750 of 1912.—Georg Müller: Wall hook.

19,738 of 1912.—Fried Krupp Aktiengesellschaft: Iron piles.

20,519 of 1912.—Johannes Wichers: Securing device for windows.

25,004 of 1912.—Henry Robbings Wardell: Cleats suitable for roofing purposes.

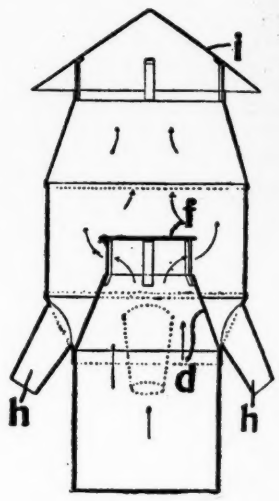
27,652 of 1912.—Henri Minot: Flushing tanks.

*All these applications are in the stage in which opposition to the grant of Patents upon them can be made.

SELECTED PATENT.

23,921 of 1911.—Karl Emil Gustav Hahn: Chimney-tops.

This relates to chimney-tops wherein a cone *d* with a cover-plate *f* is fitted within the top, the wall of which expands conically above the



23,921 of 1911.

cone, is then cylindrical, and finally contracts conically at the top. Tubes *h* incline downwards and outwards from the top, laterally of the cone *d*. A top cover *i* is provided.

TRADE CATALOGUES.

Messrs. Thomas W. Robinson, Ltd., Dennis Park Ironworks, Stourbridge, Staffs, have sent us their newest catalogue of heating apparatus, etc. The firm are the manufacturers of the well-known "expansion joint" hot-water pipes and fittings, which have stood the test of thirty years' experience. The list will be found full of interest; prices and particulars are given of Messrs. Robinson's "Dennis" heating apparatus, "Acme" radiators, the "Robin Hood" and "White Rose" cast-iron sectional boilers, and many other of the firm's sound and excellent productions.

OPPORTUNITIES FOR CABINET MAKERS.

Mr. W. Beecher Smith, of 8, Aytoun-street, Manchester, informs us that he has received particulars of good openings for cabinet-makers, machine hands, and finishers, in one of the most prosperous business centres of Ontario, also for carpenters, bricklayers, and all classes of workers, which he will be pleased to put before anyone interested.

MOTOR WORKS AT COVENTRY.

The works recently erected on the canal site at Coventry for the British Business Motors Company will come under the hammer of Messrs. Knight, Frank, & Rutley on May 1, owing to the voluntary liquidation now proceeding.

New Municipal Offices, Dublin: Design placed First.
Messrs. McDonnell & Reid, Architects.

MUNICIPAL BUILDINGS, DUBLIN.

THIS building is to be of Irish granite with Portland stone dressings, and will have a principal frontage of 286 ft. to Lord Edward-street, with a depth to Castle-street of 86 ft.

The front will be 60 ft. high, with a centre tower 50 ft. higher. There will be communication between the new and existing buildings. The cost is estimated at £55,000. The architects are Messrs. McDonnell & Reid, of Dublin.

PARLIAMENTARY NOTES.

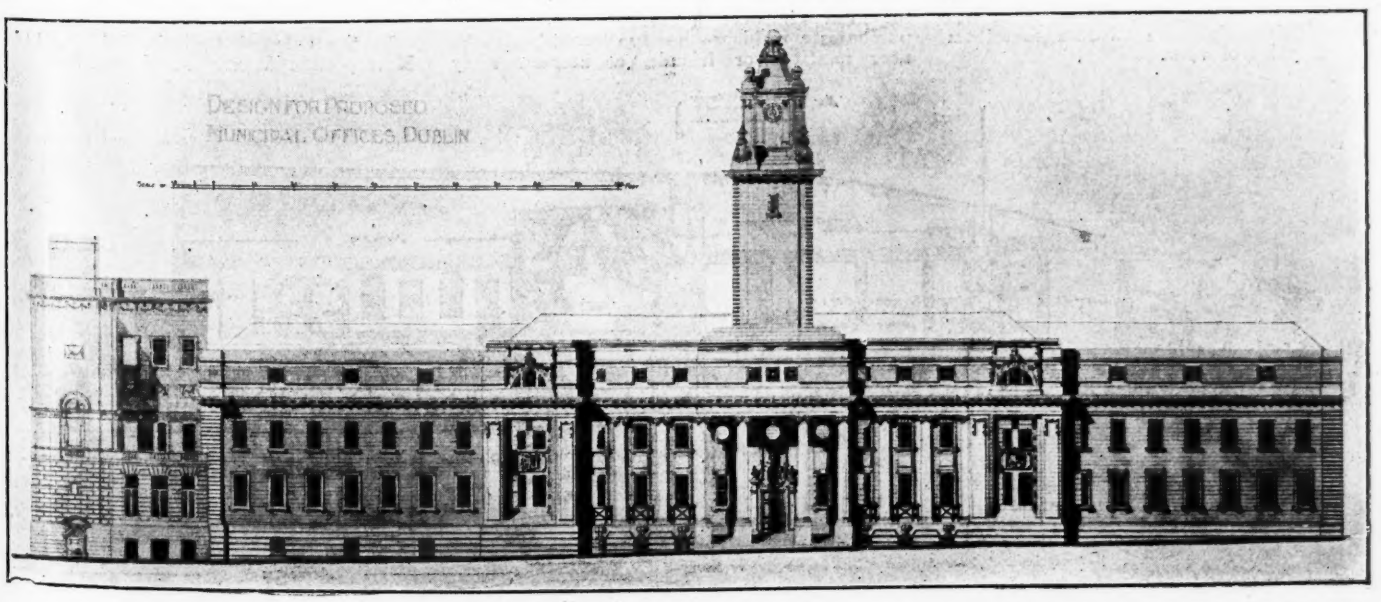
Town Planning.

IN Monday's Parliamentary Papers Mr. Rowlands asked the President of the Local Government Board to give the names of the towns which had now submitted town-planning schemes to his department, and Mr. Burns stated in reply that schemes made and submitted for approval relate to the following areas, viz., the City of Birmingham (two schemes), the Borough of Rochdale, and the urban district of Ruislip-Northwood. Authority to prepare schemes has been given in respect of the following areas, viz., the boroughs of Blackburn, Bournemouth (two), Chesterfield, Halifax (two), Liverpool, Luton, Middleton, Newcastle-upon-Tyne, Scarborough, Sheffield (three), Southport, Stoke-on-Trent, Sutton Coldfield, and Warrington; the urban districts of Cheadle and Gatley, Ellesmere Port, and Whitby, Finchley, Hanwell, Much Woolton, North Bromsgrove, Oldbury, Twickenham, and Walthamstow; and the rural district of Wirral (two). In addition, applications to prepare eleven schemes were before him, and he had information as to some 120 other cases in which the question of schemes was under consideration.

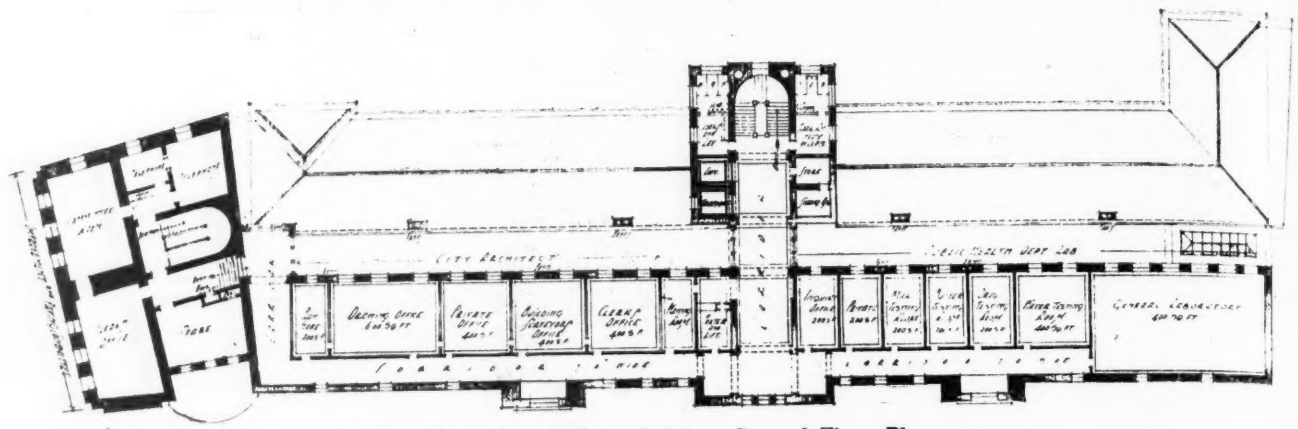
Delhi.

Mr. King on Tuesday asked the Under-Secretary of State for India whether Mr. H. V. Lanchester went out to Delhi to report on the lay-out and town planning of the new city at the request of the Viceroy or of the Secretary of State; whether Mr. Lanchester's Report would be made known by a copy being placed in the Library; and whether his plan for the lay-out of the new city would be exhibited before, simultaneously with, or after the exhibition of Mr. Lutyens' plans.

Mr. Montagu replied that Mr. Lanchester went to Delhi at the request of the Viceroy, conveyed to him by the Secretary of State. There was no Report such as Mr. King referred to, and Mr. Lanchester's memoranda were not in a form or of a nature for presentation to Parliament; nor did he think them relevant to the consideration of the plans prepared by the Town Planning Committee.



New Municipal Offices, Dublin: Design placed First.
Messrs. McDonnell & Reid, Architects.



New Municipal Offices, Dublin: Second Floor Plan.

Mr. King inquired if it was not a fact that Mr. Lanchester gave a full plan of the lay-out he proposed for the new city.

Mr. Montagu said he made several communications to the Viceroy and Government of India, but not in such a form that they could very well be submitted to Parliament. The Town Planning Committee's Report and plans were now being prepared for presentation to Parliament immediately.

In reply to a further question, Mr. Montagu said Mr. Lanchester's views were well known to the Town Planning Committee.

Mr. Alden asked whether the Government of India had now definitely decided on the southern site for the new capital of Delhi; whether he could state the extra cost likely to be incurred by the choice of the northern site; and whether he had official information showing which site would be the more advantageous from the sanitary and health point of view.

Mr. Montagu said the reply to the first question was in the affirmative. He could not answer the second question, but the additional cost for Government headquarters on the same scale would be undoubtedly heavy. As to the third part of the question, the southern site was overwhelmingly more advantageous from the health point of view.

LEGAL COLUMN.

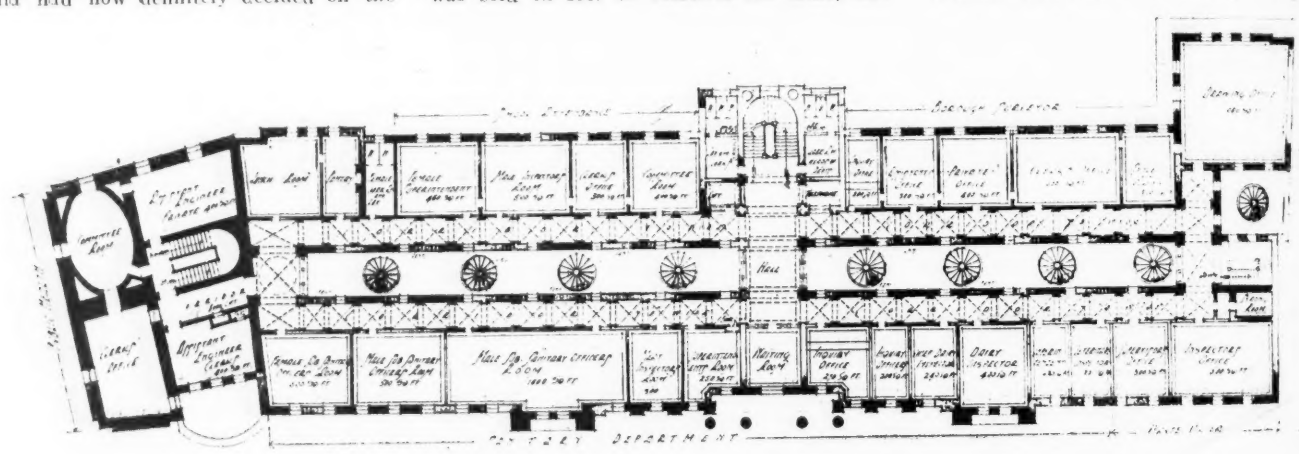
Increment Value Duty.

A decision of the Scotch Court of Session sitting to hear appeals under the Finance Act has an important bearing on the assessment of increment value duty. The case, Walker *v.* Commissioners of Inland Revenue, was reported in the *Times* of March 7. A property left by the appellant's husband, who had died in 1911, was valued in the provisional valuation as on April 30, 1909, at £400 total value, £20 assessable site value. The property was sold in 1911 to relatives for £650, and increment duty was demanded on £250. The Referee fixed the increment at £70, and the Valuation Appeal Court have confirmed his decision on the ground that £180 of the price paid represented family sentiment, which influenced the purchaser in acquiring the property.

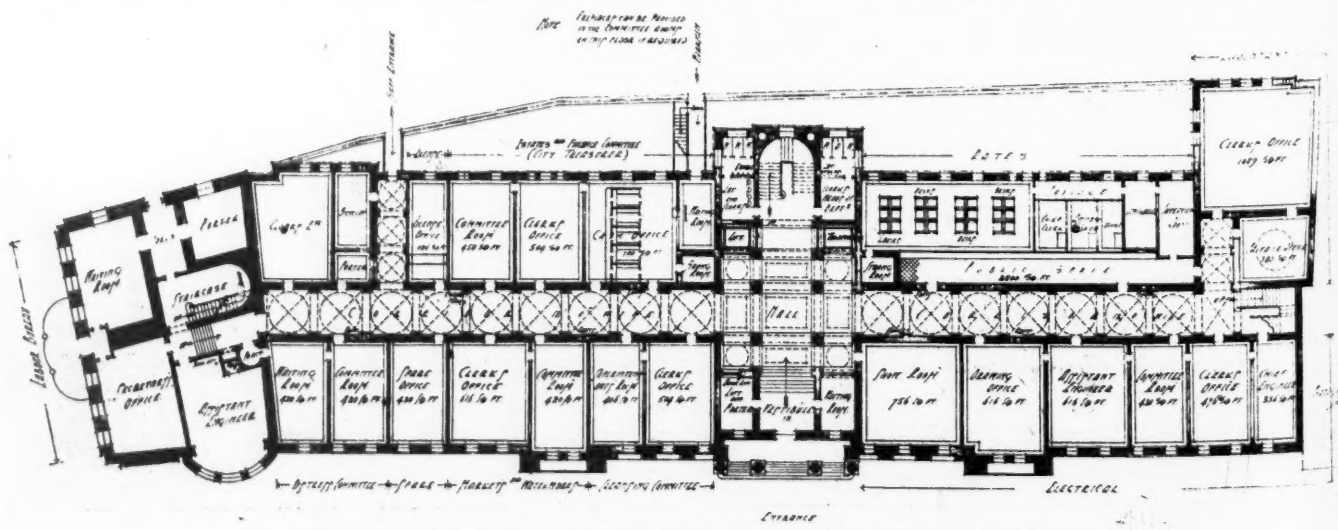
Now, if in valuing properties the motives of purchasers have to be analysed, a considerable element of uncertainty is introduced into taxation based on valuations. A certain degree of sentiment enters into the price paid for most kinds of house property. A man purchases a residence because he wishes to be near relatives or friends, or because early associations lead him to a particular district, or even because he likes the view the house commands. A man may pay a higher price for business premises because he knows the district and his particular commercial credit stands high with his neighbours in that district. These are all matters of sentiment which affect the price paid and are quite distinct from a rise in the monopoly value created by the demand of the community. In Lumsden's case there seems to have been no inquiry as to what led the purchaser to offer the price paid. The full site value having been admitted to be unchanged since the provisional valuation was made, the purchase price was simply substituted for the estimated gross value, and the same deductions made from it as on the provisional valuation. The Scotch case is at present very shortly reported, and it is not shown under what provision in the Act the purchase price was considered and apportioned. All that can be said is that this decision appears to lead to an interpretation of the Act more in line with what was said to be the intention of the Legislature when the Act was introduced.

Water Board Charges.

In the case of Colley's Patents, Ltd. *v.* Metropolitan Water Board (see the *Builder*



New Municipal Offices, Dublin: First Floor Plan.



New Municipal Offices, Dublin: Ground Floor Plan. Design placed First.

Messrs. McDonnell & Reid, Architects,

November 17, 1911) the House of Lords decided that, in a factory, the water used for the lavatories and sanitary conveniences supplied for the convenience of the employees was used for "domestic purposes" as distinct from the water supplied for trade purposes, and could be charged for on the rateable value of the premises.

In the recent case of Metropolitan Water Board *v.* Avery the converse contention was set up, as the Water Board, in the case of a public-house, which was supplied with water for domestic purposes, claimed an additional sum in respect of water used in connection with the catering business, as it was contended this water was used for trade purposes. The Court held that this water was used for "domestic purposes," and was merely ancillary to the trade carried on, and the claim was therefore disallowed.

In this case the Court pointed out that there was really no hardship to the Board, since the catering business increased the rateable value of the premises, and thus the extra water used was paid for by the increased rate.

Colley's case is, however, hard on those who consume water on trade premises, since the provision of any sanitary conveniences renders the trader liable for a rate not proportional to the water used or the number of conveniences, but based on the rateable value of the premises, a rateable value calculated on the use of the premises for business purposes and unconnected with any domestic purpose.

We cannot but think that the decision in Colley's case is the cause of the increased resort to private wells, as manufacturers desire to avoid being rated for domestic purposes, and therefore seek private supplies for sanitary conveniences in factories and workshops, and, if this is the fact, the Water Board would be well advised to seek an amendment of the law in their own interest. In the recent Memorandum issued by the Finance Committee it was stated that private supplies caused a loss to the Board of over £40,000 per annum, a very significant figure when it is remembered that the deficiency in the Board's receipts averages but £52,393 per annum.

METROPOLITAN ASYLUMS BOARD.

AT the fortnightly sitting of this Board on Saturday, last week, the following matters were dealt with:—

Fair Wages in Building Contracts.—The General Purposes Committee reported on the deputation from the London Building Industries Federation, which waited on them on February 3 to urge that the managers should adopt fair wages clauses in their building and engineering contracts similar to those which obtain in the contracts of the London County Council, and it was decided to amplify the terms of the existing form of contract so as to bring them into line with the forms of the County Council, except that the area of the London district should be defined as being within a radius of 12 miles from Charing Cross instead of 20 miles. This definition of area will, however, bring in the whole of the institutions under the control of the Board, except the seaside homes and eight other institutions.

Appointment of Architect.—Subject to the consent of the Local Government Board, Mr. T. W. Aldwinckle was appointed architect for the extension of Tooting Bec Asylum at a commission of 5 per cent. on the total cost of works, which may be carried out under his supervision. The portion of the scheme which the managers propose to carry out at the present time is estimated to cost £88,000.

Tenders Accepted.—The following tenders were accepted:—Cleaning and painting works at Brook Hospital, Mr. E. Mills, Westcombe Park, S.E., £683; cleaning and painting works at South-Eastern Hospital, Mr. L. Kazak, Belvedere, £683; alterations at Downs' Sanatorium, Messrs. A. E. Taperell & Co., 20A, Barbican, E.C., £109; tar paving at Park Hospital, Messrs. J. Wainwright & Co., £86 10s.; road repairs at Joyce Hospital, Messrs. W. Griffiths & Co., Ltd., £830 19s. 9d.; alterations at Long Reach Hospital, Mr. L. Kazak, £117; cleaning and painting works at North-Eastern Hospital, Mr. W. Hussey, £362.

LONDON COUNCILS.

Battersea.—The Highways and Works Committee report having considered as to the kind of wood to be used in connection with the scheme for paving-work recently submitted to the Road Board, and having decided to pave the following roads with the wood specified at the estimated costs set out:—With 3-in. Acme sectional hardwood blocks: portion of Albert Bridge-road, £1,453 10s.; portion of Battersea-rise, £1,655 2s.; further portion of Battersea-rise, £1,933 4s.; portion of Belle Vue-road, £2,633 8s.; portion of Nightingale-lane, £1,542 12s.; with 5-in. jarrah hardwood blocks: portion of Broomwood-road, £507 17s. 6d.; portion of Nightingale-lane, £338 11s. 8d.; with 5-in. creosoted deal blocks: portion of Battersea-rise, £1,555 18s. 9d.; further portion of Battersea-rise, £4,232 6s. 3d.; portion of Thurleigh-road, £765 7s. 6d. For the supply of the blocks required for the sectional and creosoted paving the Committee have accepted the tender of the Acme Flooring and Paving Company (1904), Ltd., at £11 16s. per 1,000 in the former case, and £8 17s. 6d. per 1,000 in the latter. They propose to report later in regard to the jarrah blocks required. The Finance Committee of the Council have adjourned the consideration of the estimate for this work, so far as they relate to Acme sectional and jarrah hardwood blocks, and they have asked the Highways and Works Committee to submit alternative estimates for carrying out such works with creosoted deal blocks. Mr. H. Hughes has lodged plans with the London County Council for the erection of an electric pavilion on the north side of Lavender-hill.

Brentford.—Messrs. Clements, Knowling, & Co. have had plans passed for the erection of nine houses in Netley and Pottery roads.

Bushey.—Plans for the erection of forty-one houses in School-lane, submitted by Mr. William Bailey, have been passed.

Croydon.—The Rural District Council have passed plans submitted by Messrs. T. W. Palmer & Co. for the erection of offices in Church-road, Mitcham.

Deptford.—The following plans have been passed:—Mr. R. M. Allen, additions to Nos. 116-118, Lewisham High-road; Mr. W. Nash, additions to the works of Messrs. Stone & Co., Ltd., Arklow-road; Mr. W. H. Whitehouse, garage, Wickham-road; Mr. A. D. Johnson, garage, Queen's-road. Mr. J. S. Heath has lodged plans with the London County Council for the erection of a cinematograph theatre at the corner of Foxberry-road and Railway-approach, Brockley.

Fulham.—North End-road, between Hammersmith-road and No. 10, is to be widened at an estimated net cost of £7,300, subject to a contribution from the London County Council. The Borough Surveyor has been instructed to undertake the work of making up and paving a portion of Rannoch-road, the estimated cost of which is put at £1,070. A contribution of £5 is to be made towards the expenses of the International Roads Congress to be held in London on June 23 to 28 next. The London County Council has given its consent to the application of Mr. Harrington, on behalf of the Wandsworth Theatre Company, to erect a building on the east side of Wandsworth-road. The Asiatic Petroleum Company, Ltd., have been granted a lease of land abutting upon Townmead-road, where it is proposed to erect a can factory.

Greenwich.—Plans have been passed for Mr. H. Ham for the erection of a telephone exchange in Creed-place; also for Mr. B. Allwright, for the erection of a laundry at the rear of Nos. 460-480, Woolwich-road.

Hackney.—A portion of East Bank is to be made up as a new street. Repairs are to be carried out to the footways in a portion of Greenwood-road at an estimated cost of £185. With reference to the tender of the Acme Flooring and Paving Company (1904), Ltd., which was accepted a couple of months ago at £4,390 6s. 6d., for paving with hardwood the carriageway of a portion of Wick-road, the Works Committee of the Council report having received a letter from the company expressing their regret that the Council did not accept their alternative tender for the execution of the work with Acme sectional jarrah wood blocks 3 in. in depth, and their strong desire that the carriageway in question should be paved with their sectional blocks. Also suggesting, with that object in view, that a foundation of Portland cement concrete, 12 in. in depth, should be provided, and that Acme sectional blocks, 3 in. in depth, should be laid thereon. This would be done, the company state, at a cost which would not exceed the amount of the tender accepted by the Council, and they would then be prepared to maintain the work free of expense for a period of seven years from the date of its completion. The Committee have agreed to the company's offer. The London County Council have advised the Borough Council that they intend to proceed at an early date with the reconstruction of the existing tramways in parts of Balls Pond-road. In connection with this work the road is to be widened on the southern side in front of Nos. 183-9. The following plans have been passed:—Messrs. R. Tidy & Son, additions to No. 413, Kingsland-road; Messrs. H. Bradford & Sons, seven houses on the eastern side of Somerford-grove, and two houses on the southern side: Mr. G. A. Lansdown, building on site of No. 277, Mare-street; Messrs. E. A. & B. T. Annerau, block of flats, Church-road, also additions to Nos. 109 to 117, Tottenham-road, and flats and warehouse, Tottenham-road: Mr. S. Plunkett, workshop, Cricketfield-road.

Hendon.—Tenders are invited by the Rural District Council for the erection of a mortuary at Edgware.

Heston and Isleworth.—The following plans have been passed:—Mr. A. C. Stephens, three shop fronts and alterations, Inwood-road, Hounslow; Mr. Herbert Knapton, ten houses, Wellington-road, South Hounslow; Mr. W. Leighfield, four houses, Jersey-road, Osterley; Mr. W. Lacey, additions to office, Hospital-road, Hounslow.

Ilford.—Negotiations are being carried on for the acquisition of land on the north and south sides of the railway at Seven Kings, for the erection of a footbridge. The Surveyor has been directed to put in hand the work of constructing a 12-in. surface water drain in Green-lane, at an estimated cost of £142. The following plans have been passed:—Messrs. W. P. Griggs & Co., Ltd., five houses Highlands-terrace, Highlands-gardens; Messrs. Howards & Son, Ltd., warehouses, Uphall Works, Uphall-road; Mr. E. T. Dunn for Mrs. R. Stroud, eight houses, Mitcham-road; Mr. Oswald Archer, additions to Salvation Army School, Clements-road; Messrs. Rawlins, Culver, & Co., four houses, Felbrigge-road; ten houses, Melrose-terrace, Breamore-road; and four houses, Lynford-gardens; Mr. J. H. Carte for Messrs. Harrison, Gibson, & Co., additions to No. 203, High-road; Mr. F. Willmott, extensions to office, etc., at No. 38, High-road; Mr. J. H. Carte for Mr. F. C. Pearce, twenty-four houses, Vicarage-lane: Mr. A. T. Haines, four houses, Bradford-road; Mr. W. J. Hobbs, seven houses, Bethell-avenue, and two houses, Nos. 26-28, Emerson-road.

Kensington.—Tenders are invited for renewing the wood-paving in portions of Elgin-crescent, Kensington-road, Palace-gate, Gloucester-road, King-street, Young-street, and Richmond-road.

Lewisham.—As soon as 75 per cent. of the estimated cost of the work has been received, tenders are to be invited for paving and forming part of Bromley-road. Tenders are also to be invited for carrying out half of the work of resurfacing the motor-omnibus routes in the borough with bituminous bound macadam; also for wood-paving Lewis-grove and the breasts of the carriageways along the route of the tramways from the Obelisk to the Greenwich Boundary. Nine hundred and sixty-three ft. of Bellingham-road, eastwards from Bromley-road, is to be made up and paved as a new street. Messrs. Norfolk & Prior have lodged plans with the London County Council for the erection of two shops on the south side of Catford-hill. The following plans have been passed:—Mr. J. Hughes, six houses, Dowanhill-road; Messrs. J. & C. Bowyer, Ltd., additions to schools, Manor-lane; Mr. H. H. Dartnall, five houses and shops, High-street.

Marylebone.—Mr. C. W. Stevens, 49, Hans-road, S.W., has been granted permission to construct vaults in front of No. 396, Oxford-street. Four refuges are to be erected in various parts of the borough at an estimated cost of £100. Messrs. Gibson, Skipworth, & Co., 5, Old Bond-street, have lodged plans with the London County Council for the erection of two balconies at Nos. 1, 3, and 3A, Wigmore-street, one on the first-floor level and the other on the fourth.

Wandsworth.—The tender of Messrs. E. Parry & Co., at £1,015, has been accepted for paving Genoa-avenue, Putney, the footpath to be constructed with Aberdeen Adamant. The tender of Messrs. J. Mowlem & Co., Ltd., has been accepted at £1,069, for carrying out repairs to a portion of Welham-road, Streatham. Plans have been passed as follows:—Messrs. Holloway's Properties, Ltd., additions at 22, Lyford-road, Springfield; Messrs. T. H. Adamson & Son, alterations and additions to motor-garage, Disraeli-road, Putney; Messrs. H. Holmes & Co., house and shop, High-street, Wandsworth.

Watford.—Plans have been passed for Mr. J. Bonham and Messrs. Clifford & Gough for the erection of four houses in Sandringham-road and for alterations and additions to Hope House, Clarendon-road, respectively.

West Ham.—The following plans have been passed:—Messrs. J. T. Bressey & Son, alterations to No. 110, Plaistow-road, Plaistow; Mr. R. Living, blouse factory at Messrs. Weeks & Cooper's premises, Neville-road, Upton Park: Mr. G. W. Beale, additions to Messrs. Lord & Wardle's Imperial Laundry, Chandos-road.

LONDON COUNCILS—*continued on page 444.*

List of Competitions, Contracts, etc.

For some Contracts still open, but not included in this List, see previous issues. Those with an asterisk (*) are advertised in this number: Competitions, iv.; Contracts, iv. vi. viii. x.; Public Appointments, xxiv.; Auction Sales, xxxii. Certain conditions beyond those given in the following information are imposed in some cases, such as: the advertisers do not bind themselves to accept the lowest or any tender; that a fair wages clause shall be observed; that no allowance will be made for tenders; and that deposits are returned on receipt of a bona-fide tender unless stated to the contrary.

The date given at the commencement of each paragraph is the latest date when the tender, or the names of those willing to submit tenders, may be sent in.

***** It must be understood that the following paragraphs are printed as news, and not as advertisements; and that while every endeavour is made to ensure accuracy, we cannot be responsible for errors that *may* occur.**

Competitions.

APRIL 16.—**Staines.**—COTTAGE HOSPITAL.—Particulars from Mr. H. Scott Freeman, Staines.

APRIL 18. — **Reading.** — SCHOOLS.—The Reading Education Committee invite designs for the Kendrick Boys' and Girls' School. Competition limited to architects resident or carrying on business within the borough. See advertisement in issue of January 24 for further particulars.

* APRIL 19.—**Bacup.**—LAYING-OUT ESTATE.—The Corporation of Bacup invite competitive designs for laying-out Morlands and Stubbylee Estates as public parks. Premiums £40, £20, and four of £10 each. See advertisement in this issue for further particulars.

April 19.—**Motherwell.**—NEW HIGH SCHOOL.—The School Board of Dalziel invite designs for new high school. Conditions of competition can be obtained on or before February 15. Assessor, Dr. J. J. Burnet. See advertisement in issue of February 7 for further particulars. See also "Competition News" (p. 266) in issue of February 28.

APRIL 21.—**Northampton.**—COUNCIL SCHOOL.—Local architects only. Second premium, 20 guineas; third premium, 10 guineas. Particulars from the Education Offices, Northampton.

APRIL 29.—**Barnet.**—MUNICIPAL OFFICES.—The Barnet U.D.C. invite designs for new Municipal Offices. Premiums £25, £15, and £10. See advertisement in issue of January 31 for further particulars.

MAY 1.—**Bridport.**—HOSPITAL.—No remuneration, but selected architect will receive 5 per cent. commission. Particulars from the Secretary.

MAY 31.—**London.**—COTTAGES AND BUNGALOWS.—Three premiums of £50 each are offered. Particulars from the Secretary, Ideal Home Exhibition, 130, Fleet-street, E.C. Assessor, Mr. Leonard Stokes, F.R.I.B.A.

* JUNE 2.—**Blackburn.**—STREET IMPROVEMENTS.—The Blackburn Corporation invite architects and surveyors to submit schemes in competition for street improvements. See advertisement in this issue for further particulars.

JUNE 7. — **Exeter.** — HOSTEL. — The Exeter City Council invite designs for the erection of a hostel for male students. Assessor, Mr. Edwin Cooper, F.R.I.B.A. See advertisement in issue of March 14 for further particulars. Plan, etc., in issue of April 4.

JUNE 14. — **Devonport.**—MUNICIPAL BUILDINGS AND GUILDHALL.—The Devonport Corporation invite designs for Municipal buildings and Guildhall. Premiums of £350, £150, and £100 respectively. See advertisement in issue of February 21 for further particulars. Plan, etc., in issue of February 28, p. 265.

* JUNE 14. — **Newcastle-on-Tyne.** — BATHS.—Competitive designs are invited for the proposed new baths at Benwell, Walker, and Heaton. See advertisement in this issue for further particulars.

JUNE 19. — **Newcastle-upon-Tyne.** — LAYING-OUT PORTION OF WALKER ESTATE.—The Housing Committee of the Newcastle-upon-Tyne Corporation invite competitive designs for laying-out a portion of their Walker Estate. Premiums as follows are offered: £50, £30, and £20. See advertisement in issue of March 28 for further particulars. Plan, etc., in issue of April 4.

JULY 1. — **Sofia.** — **DESIGNS FOR A ROYAL PALACE AND LAW COURTS.—Particulars from the Commercial Intelligence Branch of the Board of Trade, Basinghall-street, E.C. See page 173, August 9,, and page 350, September 27, 1912.**

Contracts.

BUILDING.

The date given at the commencement of each paragraph is the latest date when the tender, or the names of those willing to submit tenders, may be sent in.

APRIL 11.—**Banff.**—CHANCEL.—The Managers of St. Andrew's Episcopal Church, Banff, invite tenders for new chancel, organ chamber, etc. Plans and specifications with Mr. Arthur Clyne, F.R.I.B.A., architect, Aberdeen.

APRIL 11. — **Ellon.** — WORKS.—For works on Mains of Kinmuck, near Ellon:—New large men's chamber, and reroofing and refitting stable wing. Plans and specifications with Mr. Hugh M'Donald, Land Steward, Ellon. Offers to Messrs. Burnett & Reid, 12, Golden-square, Aberdeen.

APRIL 11.—**Llwydcoed.**—HOMES, ETC.—For the erection of an administrative block, receiving home, boys' home, stable, etc., at Llwydcoed, for the Merthyr Tydfil Board of Guardians. Plans and specification at the offices of the architect, Mr. Thomas Roderick, Clifton-street, Aberdare.

APRIL 12. — **Hirst.**—ALTERATIONS.—For alterations to drapery and other departments at Hirst branch of the Ashington Industrial Co-operative Society. Quantities from Mr. Osborne Blythe, architect, Ashington, Northumberland.

APRIL 14.—**Aylesbury.**—BUILDINGS.—For erection of cold storage, slaughter-house, stables, etc., for the Aylesbury Co-operative Society, Ltd. Specifications from Mr. S. L. Marshall, Secretary, on deposit of £1 1s.

APRIL 14. — **Blackwood.**—RESIDENCE.—For the erection of a new residence at Blackwood, Mon. Plans and specification with Mr. D. J. Thomas, M.S.A., architect, Blackwood, Mon.

APRIL 14.—**Brynmawr.**—SHOPS.—For the erection of four shops at Brynmawr for Messrs. James Brothers, grocers, Brynmawr. Plans and specifications with Mr. Ralph Simmonds, architect, Royal-chambers, High-street, Blackwood.

* APRIL 14.—**Millbank.**—NEW BUILDINGS.—The Crown Agents for the Colonies invite tenders for superstructure works to new buildings. See advertisement in this issue for further particulars.

APRIL 14. — **Mountrath.** — HOUSE.—For the erection of a dwelling-house at the Deer Park Farm, Mountrath, Queen's County. Plans and specification with Messrs. Chillingworth & Levie, civil engineers and architects, 11, Southmall, Cork.

APRIL 14. — **Oldcastle.** — BUILDINGS.—For the erection of a Medical Officer's residence and dispensary and other buildings at the Workhouse grounds, Oldcastle. Plans and specification by Mr. Michael Grace, Engineer to the Guardians, Board-room, Workhouse, Oldcastle. Plan, etc., on payment of £1.

APRIL 14. — **Preston.**—BUILDINGS.—For works of bridge building, road construction, erection of stable and potting sheds, entrance gateway and approach, children's and other shelters, etc. Plans by Messrs. T. H. Mawson & Sons, of High-street House, Lancaster, and 28, Conduit-street, London. Quantities from the Town Clerk, Town Hall, Preston.

APRIL 14.—**Wigan.**—SCHOOL.—For erection of new Council elementary school, Beech-hill, Wigan. Drawings at the office of the architects, Messrs. J. B. & W. Thornley, College-chambers, Library-street, Wigan. Quantities on deposit of £1.

APRIL 14. — **Wigton.** — WORKS.—For the construction of a stone apron and other works on the shore at Bowness-on-Solway. Specifications and particulars from the Surveyor, Mr. T. B. Simmons, M.Inst.M.C.E., Council Chambers, George-street, Wigton.

APRIL 15.—**Brentwood.**—REPAIRS, ETC.—For repairs and painting to Urban-terrace, Brentwood. Also for erecting fence at rear of Nos. 1 to 10, Urban-terrace. Specificaton with Mr. A. J. Meeson, Town Hall, Brentwood.

APRIL 15. — **Derby.**—SHELTERS.—For provision of open-air shelters. Plans and specifications from Mr. S. Barwise, County Offices, Derby.

APRIL 16. — **Balloch.** — ROOF.—Erection of a verandah roof at Balloch Station. Drawings at the office of the Caledonian Railway Company's Chief Engineer, Buchanan-street Station, Glasgow. Specification and schedule on deposit of £2 2s. Mr. Geo. G. Hamilton, Secretary, Secretary's Office, 39, Dock-street, Dundee.

APRIL 16.—**Barlborough.**—CHURCH.—For proposed new P.M. church, Barlborough. Quantities, on deposit of £1 1s., from Mr. John W. Winter, St. Peter's-close, Sheffield.

APRIL 16. — **Tarland.**—ADDITIONS.—Additions and alterations to Tarland Public School. Drawings, general conditions of contract, and specifications with Messrs. Walker & Duncan, C.E. and architects, 3, Golden-square, Aberdeen.

APRIL 16. — **Witherslack.** — HOUSE, ETC.—For building a new farmhouse and farm buildings. Plans and specifications seen, and information from Mr. John Stalker, M.S.A., architect, 57, Highgate, Kendal.

APRIL 17. — **Blackwood.** — HOUSES.—For the erection of twelve or more houses at Penmaen, Blackwood, Mon., for the Penmaen (No. 2) Building Club. Plans and specifications with Mr. Hugh Caldwell, C.E., Estate Office, Blackwood, Mon.

APRIL 17.—**Burghead.**—HOUSE.—For dwelling-house to be built in Station-road, Burghead. Plans and specifications with Mr. Charles C. Doig, architect, Elgin.

APRIL 17. — **Cobridge.**—ADDITIONS, ETC.—For alterations and additions to the Sandbach School Foundation, Globe Pottery, Cobridge. Plan and specifications with Messrs. Alfred Price & Son, architects, Sandbach. Quantities from the architects on deposit of £1 1s.

APRIL 18. — **Batley.**—RESIDENCE.—Erection of villa residence on the Carlton Grange Estate, Batley. Plans and particulars from Messrs. Walter Hanstock & Son, architects, Batley.

APRIL 18.—**Marsh.**—HOUSES.—For erection of two semi-detached houses at Marsh. Particulars from Messrs. Crowther & Shaw, plumbers, Firth-street, Marsh, Huddersfield.

APRIL 18. — **Ystrad Mynach.**—HOUSES.—For the erection of twenty houses at Ystrad Mynach for the Darran Building Club No. 2. Plans and specification with Messrs. Seaborne & Cayley, architects and surveyors, Hengoed, Cardiff.

APRIL 19. — **Ebbw Vale.** — ADDITIONS.—For additions and alterations to Libanus Congregational Church, Ebbw Vale. Plans with Messrs. Habershon, Fawckner, & Co., F.R.I.B.A., architects, 41, High-street, Newport. Quantities on deposit of £1 1s.

APRIL 19. — **Penygraig.**—SHOPS.—Erection of two shops at Penygraig. Plans and specification with Mr. R. S. Griffiths, M.S.A., architect, Tonypandy.

APRIL 19.—**Wallasey.**—CONVENIENCE.—For the erection of public convenience, Leasowe-road, Wallasey. Plans and specification by Mr. W. H. Travers, A.M.Inst.C.E., Borough Engineer and Surveyor, 18, Falkland-road, Wallasey. Deposit of £1.

APRIL 20. — **Pinchbeck.**—COTTAGES.—For erection of a pair of cottages, for Mr. W. S. Royce. Plans and specifications from Mr. W. T. Smith, Clerk to the Parish Council, Pinchbeck.

APRIL 21.—**Carrickfergus.**—HOUSES, ETC.—For the erection of six cottage houses and new drainage system, etc., at Sheel's Institution. Plans and specification with Mr. R. M. Close, M.R.I.A.I., architect, 13, Donegall-square North, Belfast, and quantities from Messrs. W. H. Stephens & Sons, 13, Donegall-square North, Belfast, on deposit of £2 2s.

APRIL 21. — **Cork.** — ALTERATIONS.—The Committee of Management of the Cork District Lunatic Asylum invite tenders for alterations in the female wing of the main building. Plans and specification at the offices of Messrs. W. H. Hill & Son, architects, 28, South-mall, Cork.

APRIL 21. — **Pontypandy.**—HOUSES.—For the erection of thirty or more houses at Pontypandy, Caerphilly, for Messrs. the Pontypandy Building Club (No. 1). Plans and specifications with Mr. William Dowdeswell, M.S.A., architect, Treharris.

APRIL 21. — **Portsmouth.** — HOSPITAL.—For building an isolation hospital at the Asylum. Form of tender and quantities on deposit of £3 3s. from Mr. G. Hammond Etherton, Clerk to the Committee of Visitors, the Town Hall, Portsmouth. Specification, general conditions, and drawings with the architect, Mr. Sydney B. Jones, 21, Hampshire-terrace, Portsmouth.

* APRIL 21.—**Tottenham.**—HALL.—The Tottenham Education Committee invite tenders for erection of a hall at Seven Sisters School, Braemar-road. See advertisement in this issue for further particulars.

APRIL 22.—**Croydon.**—ADDITIONS.—For additions and alterations to the offices at the Thornton Heath Tramway Depôt. Specification, conditions, quantities, and form of tender at the Borough Engineer's Office, Town Hall, Croydon, on deposit of £1 1s.

APRIL 22. — **Sleights.** — RESIDENCE.—For the erection of a residence on the Aislaby Moor, near Sleights. Quantities on deposit of £2 2s. to Mr. C. F. Burton, M.S.A., architect, George-street, West Hartlepool.

APRIL 24.—**Westhoughton.**—SCHOOL.—For the erection of an elementary school at Westhoughton. Plans seen and quantities at the office of the County Architect, Mr. Henry Littler, 16, Ribblesdale-place, Preston. Deposit of £2.

APRIL 25. — **Horden.**—STATION.—For the erection of a new police-station at Horden. Plans, specifications, and conditions of contract seen, and quantities, at the County Surveyor's Office, Shire Hall, Durham.

APRIL 25. — **Wakefield.** — ENLARGEMENT.—For Dalton Council School enlargement. Plans seen, and specifications, with quantities, from the Education Architect, County Hall, Wakefield. Deposit of £1. Tenders to Mr. Frances Alvey Darwin, Clerk of the County Council, County Hall, Wakefield.

BUILDING—*continued.*

The date given at the commencement of each paragraph is the latest date when the tender, or the names of those willing to submit tenders, may be sent in.

* APRIL 29. — **Southall.** — EXTENSION TO POST-OFFICE.—The Commissioners of H.M. Works and Public Buildings invite tenders for the extension of Southall Post-Office. See advertisement in this issue for further particulars.

* APRIL 29. — **London.**—VARIOUS WORKS.—The London C.C. invite tenders for cutting away and removal of part of engine-house floor and construction of foundations for new gas engines, etc. See advertisement in this issue for further particulars.

* APRIL 30.—**Cambridge.**—ADDITIONS TO GUILDHALL.—The Cambridge T.C. invite tenders for erection of additions to the Guildhall. See advertisement in this issue for further particulars.

* MAY 1. — **Battersea.** — ALTERATION TO RELIEF OFFICE. — The Wandsworth Guardians invite tenders for alterations and additions to North and South Lodges at the Latchmere Relief Offices. See advertisement in this issue for further particulars.

* MAY 2.—**Ashford.**—TECHNICAL INSTITUTE.—The Kent Education Committee invite tenders for the erection of a new Technical Institute for 150 scholars at Ashford. See advertisement in this issue for further particulars.

NO DATE.—**Abercynon.**—STATION.—For the new miners' rescue station to be erected at Abercynon for the Abercynon Collieries, Ltd. Quantities, £1 1s. as deposit, from Mr. A. F. Webb, M.S.A., architect and surveyor, Tredegar-chambers, Blackwood.

NO DATE. — **Bargoed.**—THEATRE, ETC.—For the erection of an electric theatre and palace of varieties. Deposit of £2 2s. to Mr. Geo. Kenshole, M.S.A., Station-road, Bargoed.

NO DATE.—**Birkenshaw.**—COTTAGES.—Erection of twelve cottages, streets making, etc. Mr. Arthur T. Verity, architect, 7, Kirkgate-terrace, Birkenshaw.

NO DATE.—**Carlisle.**—WAREHOUSE.—Erection of a furniture warehouse, St. Cuthbert's-lane. Mr. H. Higginson, Lic.R.I.B.A., architect, Lonsdale-street, Carlisle.

NO DATE.—**Devonport.**—EXTENSION.—For the extension of the nurses' home at the Royal Albert Hospital, Devonport. Plans and specifications seen, and quantities, on deposit of £2 2s., from Mr. Edgar M. Leest, M.S.A., 28, Ker-street, Devonport.

NO DATE. — **Donegal.** — ADDITIONS, ETC.—For additions and alterations to Milltown House, Donegal. Plans and specifications with Mr. Stephen Begley, Donegal.

NO DATE. — **Earlsdon.**—ROOM.—For the erection of a parish-room at Earlsdon. Mr. T. R. J. Meakin, M.S.A., architect, 11, Warwick-row, Coventry.

NO DATE.—**Eye.**—INFIRMARY.—For the erection of new infirmary at Eye, Suffolk. Quantities from the architect, Mr. Herbert J. Green, A.R.I.B.A., Norwich, on £3 3s. deposit.

NO DATE. — **Kendal.**—REPAIRS.—Repairs, etc., to the various properties belonging to the Catholic Mission in Kendal. Specification from Mr. John Stalker, M.S.A., architect, Kendal.

NO DATE. — **King's Lynn.**—RESIDENCE.—For the erection of an eight-room residence. Plans and specification seen, and quantities from Mr. Louis F. Eagleton, architect and surveyor, King-street, King's Lynn.

NO DATE. — **Northwick.** — RESTORATION.—For the restoration of Northwick Church, Glos. Mr. Maynard Froud, Lic.R.I.B.A., architect and surveyor, 1, St. Stephen's-chambers, Baldwin-street, Bristol.

NO DATE. — **Outwood.**—HOUSES, ETC.—For the erection of three houses and house and shop at Leeds-road, Outwood. Quantities from Mr. Thomas H. Bickley, architect, Horbury.

NO DATE. — **Portsmouth.** — WARDS, ETC.—The Committee of Management of the Portsmouth Eye and Ear Infirmary invite tenders for the erection of new wards, etc., on site adjoining the present building. Plans and specifications at the offices of the surveyor, Mr. C. W. Ball, Whittington-chambers, 75, King's-road, Southsea. Deposit of £3 3s.

NO DATE.—**Rhoose.**—HOUSES.—For five houses at Rhoose. Quantities from the Building and Estates Development Company, Ltd., Canada House, Bristol.

NO DATE. — **Rhymney.**—OFFICES.—The Rhymney Iron Company, Ltd., invite tenders for the erection of proposed new general offices at Rhymney. Mr. J. Llewellin Smith, M.S.A., Lic.R.I.B.A., Aberdare.

NO DATE.—**St. Austell.**—GATES.—For the construction and erection of dock gates, etc., at the Port of Pentewan. Mr. Noel F. Bellamy, Bodmin-road, St. Austell.

NO DATE.—**Seaton Carew.**—VILLAS.—For the erection of several pairs of semi-detached villas on the Golden Flatts Garden City, Seaton Carew. Mr. J. Hamilton Garry, architect, 47, Church-street.

NO DATE.—**South Elmsall.**—MANSE.—Erection of new Wesleyan manse at South Elmsall. Quantities and particulars from Messrs. Garside & Pennington, architects, surveyors, etc., Pontefract and Castleford.

NO DATE.—**South Kirkby.**—HOUSES.—For the erection of two houses at South Kirkby for the South Kirkby, Featherstone, and Hemsworth Collieries, Ltd. Messrs. Garside & Pennington, architects, surveyors, etc., Pontefract and Castleford.

NO DATE. — **Swansea.**—BLOCK.—For the erection of a nurses' home block on a site in the Union Workhouse grounds. Plans and specifications seen, and quantities from Mr. Charles T. Ruthen, architect, Bank-chambers, Heathfield-street, Swansea. Deposit of £3 3s.

NO DATE.—**Swansea.**—THEATRE.—For the erection of new premises and large picture theatre. Drawings and specifications seen, and quantities from Mr. C. T. Ruthen, architect, Bank-chambers, Heathfield-street, Swansea. Deposit of £3 3s

NO DATE.—**Wakefield.**—HOUSE.—For the erection of house, Denby Dale-road, Wakefield. Mr. Herbert Dobson, architect and surveyor, City-chambers, Wakefield.

NO DATE. — **Whitby.** — HOUSE.—For proposed house at Goathland. Mr. Harold G. Walker, M.S.A., architect, Whitby.

NO DATE.—**York.**—SCHOOL.—For the erection of the Knavesmire Public Elementary School. Quantities and forms of tender from the architect, Mr. John T. Proffitt, Central-buildings, Memorial-road, Walkden, Manchester, on deposit of £2 2s.

ENGINEERING, IRON, AND STEEL.

APRIL 15. — **Bolton-upon-Dearne.** — BRIDGEWORK.—For improvement of bridge and highway at Nicholas-lane. Specification, quantities, and information from Mr. T. Bull, M.I.Mun.E., Council Offices, Thurnscoe, on deposit of 10s. 6d.

APRIL 16. — **Chelmsford.** — FILTER.—For the provision and construction of an additional filter at the Public Swimming Bath, Waterloo-lane, Chelmsford. Specification and form of tender from the Borough Engineer, 16, London-road, Chelmsford.

* APRIL 22. — **Willesden.** — PAINTING AND CLEANSING.—The Willesden D.C. invite tenders for cleansing and painting works at various parks within the borough. See advertisement in this issue for further particulars.

* APRIL 23.—**Tooting.**—PAINTING AND CLEANSING, ETC.—The Metropolitan Asylums Board invite tenders for painting, cleansing and repairs at the Grove Fever Hospital. See advertisement in this issue for further particulars.

* APRIL 29.—**Great Yarmouth.**—HEATING AND HOT-WATER WORKS. — The Yarmouth Guardians invite tenders for heating with hot water the female infirmary block. See advertisement in this issue for further particulars.

APRIL 29. — **Warrington.** — FRAMES.—For the supply of two steel frames. Specification and form of tender, on deposit of £1 1s., from Mr. F. V. L. Mathias, Borough Electrical and Tramways Engineer, Howley, Warrington.

FURNITURE, PAINTING, MATERIALS, etc.

APRIL 12. — **Boldon.**—PAINTING, ETC.—For the papering and painting of the Boldon Colliery Workmen's Club and Institute. Secretary, Boldon Colliery W.M. Club, Station-road, Boldon Colliery.

APRIL 14. — **Macclesfield.** — PAINTING.—For painting and decorating the dining hall at the Workhouse. Specification at the Workhouse Master's Office. Mr. Frederick May, Clerk to the Guardians, Union Offices, Macclesfield.

APRIL 16. — **Hartlepool.**—PAINTING, ETC.—For distempering and paperhanging the various rooms of twenty-one houses in Warren-street, Corporation-road, and Northgate, Hartlepool. Mr. Percy Horsley, Borough Engineer and Surveyor, Borough Buildings, Hartlepool.

APRIL 18.—**Dihewid.**—PAINTING.—For painting and decorating Dihewid Congregational Chapel. Mr. E. I. Jones, Arfryn, Dihewid.

APRIL 19. — **Leeds.** — PIPES, ETC. — For the supply of cast-iron pipes, retort castings, flags. Specifications and forms of tender from Mr. R. H. Townsley, General Manager, Gas Offices, Market Hall, Leeds.

APRIL 21. — **Manchester.** — PAINTING.—The Waterworks Committee invite tenders for painting the iron bridges on the line of Aqueduct from near Ambleside to Agrecroft, near Manchester. Specification, form of tender, and information from the Assistant Secretary, Waterworks Offices, Town Hall, Manchester.

* APRIL 21. — **Notting Hill.**—PAINTING, ETC.—The St. Marylebone Board of Guardians invite tenders for painting, colouring, cleansing, and repairs at the Infirmary, Rackham-street, Notting Hill, W. See advertisement in this issue for further particulars.

* APRIL 22.—**West Ham.**—PAINTING, REPAIRS, ETC. — The West Ham B.C. invite tenders for painting, cleansing, repairs, etc., of public buildings. See advertisement in this issue for further particulars.

* APRIL 26. — **Ilford.** — DESKS, ETC.—The Ilford Education Committee invite tenders for supply and delivery of dual desks and other furniture. See advertisement in this issue for further particulars.

NO DATE.—**Bradford-on-Avon.**—DECORATION.—For the renovation and decoration of the Congregational Church, Bradford-on-Avon. Specifications and particulars from Mr. Alfred Long, architect, West Bromwich.

ROADS, SANITARY AND WATER WORKS.

APRIL 11. — **Chelmsford.** — SEWERS. — For making a new road and laying sewers on the Greengates Estate, Moulsham, Chelmsford. Plans and specification at the offices of Messrs. Charles & W. H. Pertwee, architects and surveyors, Chelmsford.

APRIL 14. — **Guildford.** — GRANITE.—For the supply of granite. Forms of tender and information from the Surveyor of the Council, Mr. John Anstee, C.E., Council's Offices, Commercial-road, Guildford.

APRIL 14. — **Longbenton.**—CARRIAGEWAY.—For carriageway and footway construction at Newton-road, South Gosforth. Particulars from Mr. J. Landell Nicholson, Engineer and Surveyor to the Council, 12, Grey-street, Newcastle-on-Tyne. Quantities on deposit of £1 1s.

APRIL 14. — **Stockton-on-Tees.** — IMPROVEMENTS.—For the private improvements required to be done in Richardson-road and Dennison-street. Plans and specification seen, and forms of tender at the Borough Engineer's Office.

APRIL 14.—**Warmley.**—SEWAGE.—For the construction of main outfall and branch sewers. Plans, specifications, and quantities at the office of Mr. H. M. Bennett, Liverpool-chambers, Corn-street, Bristol.

APRIL 15.—**Aldershot.**—FLINTS, ETC.—For supplying Rheinish or Devon basalt, broken to a 2-in. gauge; of best red Hungry Hill flints; ¾-in. limestone tar-paving; and blast furnace slag tarmacadam, bituminous asphaltic binder; 12 and 10 by 6 granite kerbing; 12 by 5 blue pennant channel. Forms and particulars from Mr. F. C. Uren, Surveyor, Municipal Buildings, Aldershot.

APRIL 16. — **Bournemouth.** — ROAD. — For making-up Herberton-road. Particulars forms of tender, specifications, and schedules of the Borough Engineer, Mr. F. W. Lacey, M.Inst.C.E., Borough Engineer and Surveyor, Municipal Offices, Bournemouth. Deposit of £1 1s.

APRIL 17. — **Huntly.** — SEWER.—For supplying and laying a new 15-in. fireclay pipe sewer from Lennox-terrace to the outfall on the River Bogie. Specifications from the Burgh Surveyor, Mr. John Allan, Burgh Surveyor's Office, Huntly.

APRIL 19. — **Bexhill.** — ROAD.—For making-up Woodville-road. Plans seen, and specifications, quantities, and forms of tender from the Borough Surveyor, Mr. Geo. Ball, A.M.Inst.C.E., Town Hall. Deposit of £1 1s.

APRIL 21.—**Reigate.**—ROAD WORKS.—For the making-up of a portion of Station-road, Redhill. Form of tender, conditions of contract, and particulars from Mr. Fred T. Clayton, the Borough Surveyor, Municipal Buildings, Reigate.

APRIL 22.—**Burgess Hill.**—GRANITE.—For the supply of 850 tons broken granite and 75 tons fine granite. Mr. A. F. Hardwick, Clerk, Burgess Hill, Sussex.

APRIL 22.—**Corby.**—SEWAGE.—For the construction of about 3,000 yds. of 7-in., 9-in., and 12-in. stoneware pipe sewers, together with manholes, flushing chambers, tanks, continuous filters, effluent drains, and other works. Drawings at the offices of the engineers, Messrs. Everard, Son, & Pick, 6, Millstone-lane, Leicester. Specification, quantities, and form of tender on deposit of £2 2s.

APRIL 23. — **Ely.**—GRAVEL, ETC.—For 572 tons and 1,140 yds. of coarse clunch and 450 tons and 866 yds. of coarse screened gravel. Forms of tender from Mr. F. W. Firby, District Surveyor, Sutton, Isle of Ely.

* APRIL 23. — **Fulham.** — MAKING-UP CARRIAGEWAY. — The Fulham B.C. invite tenders for making-up the carriageway of Hurlingham-gardens. See advertisement in this issue for further particulars.

APRIL 23.—**Rumney.**—SEWAGE.—For the completion of the sewerage scheme for the drainage area of Rumney, near Cardiff. Drawings and specification seen, and quantities and form of tender, on deposit of £5, from Mr. A. H. Rees, Clerk, Council Offices, Newport, Mon.

APRIL 30. — **Winteringham.**—CULVERT.—For making a culvert under the sluice road in Winteringham. Plan and specification with Mr. Frank C. Hett, Clerk, Brigg.

Public Appointments.

Nature of Appointment.	By whom Advertised.	Salary.	Application to be in
*FOUR CLERKS OF WORKS.....	Manchester Rivers Committee	£3 3s. per week.....	No date.

Auction Sales.

Nature and Place of Sale.	By whom Offered.	Date of Sale.
*FREEHOLD WHARF AND FACTORY PREMISES—At the Mart	May & Rowden	April 17
*SCULPTOR'S PLANT, STATUES, Etc.—On the Premises	Knight, Frank, & Rutley	April 22
*BUILDING LEASE, No. 63, FLEET-STREET	Debenham, Tewson, & Richardson	April 29
*FREEHOLD BUILDING ESTATE, ASHTEAD, SURREY—At the Mart	Farebrother, Ellis, & Co.	May 1
*FREEHOLD ESTATE, MAIDENHEAD—At the Mart	Debenham, Tewson, & Richardson	May 6

LONDON COUNCILS—*continued from page* 441.

Stratford; Mr. W. R. Jackson, cinematograph theatre, Romford-road, Forest Gate; Messrs. Pearse & Rowse, alterations to Nos. 399 and 401, High-street, Stratford.

Wimbledon.—Application is to be made to the Local Government Board for a grant towards the cost of surfacing the carriageways of Alexandra-road, Gap-road, and Plough-lane with tarred macadam, the total estimated cost of which is put at £3,122. The Works Department has been instructed to proceed with the work of erecting an additional ward at the isolation hospital at a cost not exceeding £3,880. The Borough Surveyor has been instructed to prepare plans and estimates of the cost of providing an additional ward at the isolation hospital, containing eighteen beds; also for the erection of a tuberculosis dispensary in the hospital grounds. The following plans have been passed:—Messrs. Bannan & Rowe, additions to "Clarewood," Arthur-road; Messrs. Gale, Durlacher, & Emmett, two shops, Coombe-lane; Mr. A. Hurst, additions to the King's Palace Electric Theatre, Merton-road; Messrs. G. Godson & Sons, Roman Catholic Church, corner of the Crescent and Crescent-gardens. Plans have been lodged by Mr. A. J. Stratton for the erection of science workshops, etc., at King's College School, Wimbledon Common.

Woolwich.—A letter has been received from the London County Council stating that they propose at an early date to proceed with the reconstruction of the existing horse tramways between Chapel-street and Nile-street. The tender of the Improved Wood Pavement Company has been accepted for supplying and laying 9,000 super. yds. of creosoted yellow deal paving in Eltham-road, at 6s. 6d. per yard super., as has also the tender of Durax Dustless Roads, Ltd., for laying about 5,000 super. yds. of "Durax" paving, at 8s. per yard super., including five years' free maintenance. The following plans have been passed:—Mr. J. Stevens, 31, New-road, Woolwich, building Walpole-place; Messrs. Greig & Hutchings, 20, Balcaskie-road, Eltham: eight houses, Gourock-road, Eltham. The General Building Company, 45 and 46, Chandos-street, W.C., clubhouse on north side of Eltham-road, Lee, for Sir F. L. Cook, Bart.

OBITUARY.

Mr. H. J. Spiller.

By the death of Mr. Henry J. Spiller, of Taunton, on the 3rd inst., is removed one of the best-known builders in the West of England. In the course of his career Mr. Spiller has been engaged on many well-known buildings, commencing with the erection of St. David's Station, Exeter, some fifty years ago, and including the building of the Roman Catholic Church and of St. Andrew's Church, and the taking down and rebuilding of the tower of St. James's Church at Taunton, as well as a number of church restorations in Somerset and Devon. Mr. Spiller found time to fill many public offices. He was for thirty-two years a member of the Taunton Town Council and twice filled the office of Mayor, in 1888 and again in 1911; he had also filled the office of President of the South-Western branch of the Building Trades' Federation. His funeral on Monday was attended by the Taunton Mayor and Corporation, as well as the members of various other public bodies with which he had been identified. He leaves five sons, all of whom are engaged in the building trade or in civil engineering.

FOREIGN AND COLONIAL.

Building in South Africa.

The contract for the erection of the south, east, and west wings of the central block of the Art Gallery at Johannesburg has been let to a local firm for the sum of £44,249. Following the call for tenders by the South African Railways Administration for the supply and erection of a steel-framed building to form an extension of the machine shop at Pietermaritzburg, it is notified that the contract has been awarded to a Durban firm for the sum of £1,778. The contract for the reconstruction of Gilfillan Bridge, over the Fish River at Cradock, has been awarded to a Cape Town firm for the sum of £12,141. The names of the successful contractors may be obtained by United Kingdom manufacturers on application to the Commercial Intelligence Branch of the Board of Trade, 73, Basinghall-street, London, E.C.

PUBLISHER'S NOTICES.

Tel., 6112 Gerrard. Telegrams, "The Builder, London."

CHARGES FOR ADVERTISEMENTS.

COMPETITIONS, CONTRACTS, ALL NOTICES ISSUED BY CORPORATE BODIES, COUNTY AND OTHER COUNCILS, PROSPECTUSES OF PUBLIC COMPANIES, SALES BY TENDER, LEGAL ANNOUNCEMENTS, etc., etc.

Six lines or under ..... 6s. 0d.
Each additional line ..... 1s. 0d.

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Six lines (about fifty words) or under ..... 4s. 6d.
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Four lines (about thirty words) or under ..... 2s. 6d.
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PREPAYMENT IS ABSOLUTELY NECESSARY.

*** Stamps *must not* be sent; but all sums should be remitted by Postal Orders, payable to J. MORGAN, and addressed to the Publisher of "THE BUILDER," 4, Catherine Street, W.C.

Advertisements for the current week's issue are received up to ONE p.m. on THURSDAY, but "Classification" is impossible in the case of any which may reach the Office after TWELVE NOON on that day. Those intended for the Outside Wrapper should be in by TWELVE NOON on WEDNESDAY.

ALTERATIONS IN STANDING ADVERTISEMENTS or ORDERS TO DISCONTINUE same must reach the Office before TEN o'clock on WEDNESDAY MORNING.

The Publisher cannot be responsible for DRAWINGS, TESTIMONIALS, etc., left at the Office in reply to advertisements, and strongly recommends that of the latter COPIES ONLY should be sent.

ADVERTISERS in "THE BUILDER" may have *Replies addressed to the Office, 4, Catherine Street, Aldwych, W.C., free of charge.* Letters will be forwarded if addressed envelopes are sent, together with sufficient stamps to cover the postage. Unused stamps are returned to advertisers the week after publication.

N.B.—The Reply Boxes are not intended for trade lists, circulars, and the like; should these be received, they cannot (if noticed) be forwarded.

AN EDITION Printed on THIN PAPER, for FOREIGN the COLONIAL CIRCULATION, is issued every week.

READING CASES { NINEPENCE EACH. By post (carefully packed), 1s.

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

March 5.—By BARBER & SON.

Broseley, Salop.—Woodhouse Farm, cottages, etc., 166 a. 1 r. 2 p., f. £3,975

March 15.—By ADKIN, BELCHER, & BOWEN.

Garsington, Oxon.—The Manor Estate, 360 acres, f. 8,450

March 18.—By HULBERT & HAYSMAN.

Camberwell.—10, Cormont-rd., u.t. 80 yrs., g.r. £5, e.r. £40 350
Brixton.—29, Crawshay-rd., u.t. 50¼ yrs., g.r. £5 5s., e.r. £34 250

March 19.—By KEMSLEY.

Romford.—7, 9, and 11, Craigdale-rd., f., e. and w.r. £72 16s. 615
1 and 3, King Edward-rd., f., w.r. £46 16s. ... 500

By MAY & PHILPOT.

Streatham.—Tooting Bec Gdns., Oakdene, f., p. 1,300

By WILLIAM HOLLIS.

Westminster.—45, Vincent-sq., u.t. 11 yrs., g.r. £8, y.r. £70 155

March 20.—By C. C. & T. MOORE.

Mile End.—18, 20, and 22, Bloomfield-rd., u.t. 53 yrs., g.r. £13 10s., w.r. £117 450
St. George's East.—44, Grove-st. (site), f. 140
Bethnal Green.—7 and 9, Bratley-st., u.t. 43½ yrs., g.r. £8 8s., w.r. £59 16s. 170
Victoria Park.—312, Old Ford-rd., u.t. 40 yrs., g.r. £7 10s., y.r. £35 120

March 26.—By LEOPOLD, FARMER, & SONS.

Kilburn.—15, Cambridge-ave., u.t. 45 yrs., g.r. £11, y.r. £50 275
Battersea.—26, Falcon-ter., 29 and 31, Lavender-ter., u.t. 21 yrs., g.r. £7, y. and w.r. £116 16s. 430

By WYATT & SON.

Chichester.—117, St. Pancras (s.), f., p. 250
Birdham-rd., Southdowns View, f., p. 445

March 27.—By G. E. SWORDER & SONS.

Clavering, Essex.—Clavering Grange Farm, 101 acres, f. 1,770

March 31.—By DYER, SON, & HILTON.

Lee.—101, Burnt Ash-hill, u.t. 54 yrs., g.r. £20, y.r. £80 ..... £380

By G. E. SWORDER & SONS.

Crouch End.—27, Cresent-rd., u.t. 55½yrs., g.r. £7 10s., p. 345

April 1.—By WHITE & CO.

Dulwich.—60, Barry-rd., u.t. 52 yrs., g.r. £6, y.r. £35 250
Herne Hill.—257, 259, and 261, Railton-rd., u.t. 33¾ yrs., g.r. £15, w.r. £109 4s. 255

By LETHABY & LETHABY.

Enfield.—31, Halstead-rd., f., w.r. £22 2s. 170

By H. & R. L. COBB.

Gillingham, Kent.—Bay Tree Cottage, and 6 a. 3 r. 14 p., f. 1,695
Higham, Kent.—Brookers House and Natts Cottage, f. 500
Allhallows, Kent.—Arable land, 3a. 1r. 7 p., f. 135
Rochester, Kent.—337, High-st., f., p. 450

April 2.—By WATERER & DICKINS.

Bickley, Kent.—Denbridge-rd., The Croft, stabling, and 1¼ acre, f., and u.t. 93 yrs., g.r. £28 16s. 9d., p. 2,600

By ANSTEY, SONS, & DORLING.

Plaistow.—22, 45, and 47, Salmen-rd., f., w.r. £57 4s. 350
45, Prince Regent's-la., f., w.r. £29 18s. 275

April 3.—By FAREBROTHER, ELLIS, & Co.

Putney.—Embankment-rd., New University Boathouse, f.g.r. £7, reversion in 7 yrs. 1,200
Sims' and Vesta Rowing Clubhouse, f.g.r., etc., £25, reverson in 7 yrs. 2,000

By NEWBON & SHEPHARDS.

Highgate.—17 and 21, Salisbury-rd., u.t. 37 yrs., g.r. £12, w.r. £89 14s. 235
Holloway.—104 and 106, Cottenham-rd., u.t. 44 yrs., g.r. £10 10s., w.r. £88 8s. 210
Upton Park.—59, Plashet-gr., u.t. 73¾ yrs., g.r. £4 10s., gross rental £36 133

By PROTHEROE & MORRIS.

Orsett, Essex.—Five enclosures, 60 a. 2 r. 30 p., f. 1,000

By STIMSON & SONS.

Camberwell.—1 to 4, Rust-sq., u.t. 45 yrs., g.r. £25 4s., w.r. £166 8s. 620
1, Brunswick-sq., f., e.r. £70 600
3, Peckham-gr., f., e.r. £65 550
1, Sandover-rd., u.t. 68 yrs., g.r. £7 10s., w.r. £53 6s. 125
Walworth.—61 and 63, Thurlow-st., u.t. 38 yrs., g.r. £10, w.r. £78 300
80, Westmorland-rd., u.t. 36 yrs., g.r. £6, p. 200
Old Kent-rd.—48, Loder-st., u.t. 32½ yrs., g.r. £4 4s., p. 100
Herne Hill.—89, Fawnbrake-av. and plot of land, f., and u.t. 86 yrs., g.r. £8 10s., e.r. £50. 500
Poplar.—5, High-st. (s), c., e.r. £36 205

Contractions used in these lists.—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; p. for possession; e.r. for estimated rental; w.r. for weekly rental; q.r. for quarterly rental; y.r. for yearly rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; la. for lane; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; av. for avenue; gdns. for gardens; yd. for yard; gr. for grove; b.h. for beerhouse; p.h. for public-house; o. for offices; s. for shops; ct. for court.

TO CORRESPONDENTS.

NOTE.—All communications with respect to literary and artistic matters should be addressed to "THE EDITOR" (and not to any person by name); those relating to advertisements and other exclusively business matters should be addressed to "THE PUBLISHER," and *not* to the Editor.

All communications must be authenticated by the name and address of the sender, whether for publication or not. No notice can be taken of anonymous communications.

The responsibility of signed articles, letters, and papers read at meetings rests, of course, with the authors.

We cannot undertake to return rejected communications; and the Editor cannot be responsible for drawings, photographs, manuscripts, or other documents, or for models or samples, sent to or left at this office, unless he has specially asked for them.

All drawings sent to or left at this office for consideration should bear the owner's name and address on either the face or back of the drawing. Delay and inconvenience may result from inattention to this.

Any commission to a contributor to write an article, or to execute or lend a drawing for publication, is given subject to the approval of the article or drawing, when received, by the Editor, who retains the right to reject it if unsatisfactory. The receipt by the author of a proof of an article in type does not necessarily imply its acceptance.

N.B.—Illustrations of the First Premiated Design in any important architectural competition will always be accepted for publication by the Editor, whether they have been formally asked for or not.

PRICES CURRENT OF MATERIALS.

** Our aim in this list is to give, as far as possible, the *average* prices of materials, not necessarily the highest or lowest. Quality and quantity obviously affect prices—a fact which should be remembered by those who make use of this information.

BRICKS, &c.

Per 1000 Alongside, in River.	£ s. d.
Best Stocks	1 16 0
Picked Stocks for Facings	2 10 0

Per 1000, Delivered at Railway Depôt.

	£ s. d.		£ s. d.
Flettons	1 14 0	Best Blue Pressed Staffordshire	3 15 0
Best Fareham Red	3 12 0	Do. Bullnose	4 0 0
Best Red Pressed Ruabon Facing	5 0 0	Best Stourbridge Fire Bricks	4 0 0

Glazed Bricks—			
Best White, Ivory, and Salt Glzd. Str'tch'rs	12 7 6	Double Headers	14 17 6
		One Side and two Ends	18 17 6
Headers	11 17 6	Two Sides and one End	19 17 6
Quoins, Bullnose, and 4½ in. Flats	15 17 6	Splays & Squints	17 7 6
D'ble Stretchers	17 17 6		

Second Quality £1 10s. per 1000 less than best.

	s. d.	
Thames and Pit Sand	6 9	per yard, delivered.
Thames Ballast	5 6	" "
Best Portland Cement	36 0	per ton, "
Best Ground Blue Lias Lime	19 0	" "

Note—The cement or lime is exclusive of the ordinary charge for sacks.

Grey Stone Lime ..... 13s. 6d. per yard delivered.
Stourbridge Fireclay in sacks 27s. 0d. per ton at rly dp't.

STONE.

Per Ft. Cube.

	s. d.
Bath Stone—delivered on road waggons, Paddington Depôt	1 7½
Do. do. delivered on road waggons, Nine Elms Depôt	1 9½
Portland Stone (20 ft. average)—	
Brown Whitbed, delivered on road waggons, Paddington Depôt, Nine Elms Depôt, or Pimlico Wharf	2 4½
White Basebed, delivered on road waggons Paddington Depôt, Nine Elms Depôt, or Pimlico Wharf	2 6½

Per Ft. Cube, delivered at Railway Depôt.

	s. d.		s. d.
Ancaster in blocks	1 10	Closeburn Red Freestone	2 0
Beer in blocks	1 6	Red Mansfield Freestone	2 4
Greenshill in blocks	1 10	Talacre & Gwespyr Stone	2 4
Darley Dale in blocks	2 4		
Red Corsehill in blocks	2 3		

York Stone—*Robin Hood Quality.*

Per Ft. Cube, Delivered at Railway Depôt.	s. d.
Scappled random blocks	2 10

Per Ft. Super., Delivered at Railway Depôt.

6 in. sawn two sides landings to sizes (under 40 ft. super.)	2 3
6 in. rubbed two sides ditto, ditto	2 6
3 in. sawn two sides slabs (random sizes)	0 11½
2½ in. to 2¾ in. sawn one side slabs (random sizes)	0 7
1¼ in. to 2 in. ditto, ditto	0 6

Hard York—

Per Ft. Cube, Delivered at Railway Depôt.

Scappled random blocks	3 0

Per Ft. Super., Delivered at Railway Depôt.

6 in. sawn two sides landing to sizes (under 40 ft. super.)	2 8
6 in. rubbed two sides ditto	3 0
3 in. sawn two sides slabs (random sizes)	1 2
2 in. self-faced random flags	0 5

SLATES.

Per 1000 of 1200 at Railway Depôt.

In. In.	£ s. d.	In. In.	£ s. d.
30×10 best blue Bangor	13 2 6	20×10 best Eur'ka unfading green	15 17 6
20×12 ditto	13 17 6	20×12 ditto	18 7 6
20×10 1st quality ditto	13 0 0	18×10 ditto	13 5 0
20×12 ditto	13 15 0	16×8 ditto	10 5 0
16×8 ditto	7 5 0	20×10 permanent green	11 12 6
22×10 best blue Portmadoc	12 12 6	18×10 ditto	9 12 6
16×8 ditto	6 12 6	16×8 ditto	6 12 6

TILES.

At Railway Depôt.

	s. d.		s. d.
Best plain red roofing (per 1000)	42 0	Best "Hartshill" brand, plain sand-faced (per 1000)	45 0
Hip and Valley (per doz.)	3 7	Do. pressed (per 1000)	42 6
Best Broseley (per 1000)	50 0	Do. Ornamental (per 1000)	47 6
Do. Ornamental (per 1000)	52 6	Hip (per doz.)	4 0
Hip and Valley (per doz.)	4 0	Valley (per doz.)	3 6
Best Ruabon red, brown, or brindled (Edw'ds) (per 1000)	57 6	Staffords. (Hanley) Reds or Brindled (per 1000)	42 6
Do. Ornamental (per 1000)	60 0	Hand-made sand-faced (per 1000)	45 0
Hip (per doz.)	4 0	Hip (per doz.)	4 0
Valley (per doz.)	3 0	Valley (per doz.)	3 6

WOOD.

Building Wood.	At per standard. £ s. d.		£ s. d.
Deals: best 3 in. by 11 in. and 4 in. by 9 in. and 11 in.	15 0 0	...	16 10 0
Deals: best 3 in. by 9 in.	15 0 0	...	16 0 0

WOOD (*Continued*).

Building Wood (*Continued*)—	At per standard. £ s. d.		£ s. d.
Battens: best 2½ in. by 7 in. and 8 in., and 3 in. by 7 in. and 8 in.	12 10 0	...	13 10 0
Battens: best 2½ by 6 and 3 by 6	0 10 0	...	less than 7 in. and 8 in.
Deals: seconds	1 0 0	less than best.	
Battens: seconds	0 10 0	"	"
2 in. by 4 in. and 2 in. by 6 in.	11 10 0	...	12 10 0
2 in. by 4½ in. and 2 in. by 5 in.	10 10 0	...	11 10 0
Foreign Sawn Boards—			
1 in. and 1¼ in. by 7 in.	0 10 0	more than battens.	
¼ in.	1 0 0	"	
Fir timber: best middling Danzig or Memel (average specification)	At per load of 50 ft. 5 0 0	...	6 5 0
Seconds	4 10 0	...	5 0 0
Small timber (8 in. to 10 in.)	3 17 6	...	4 0 0
Small timber (6 in. to 8 in.)	3 5 0	...	3 10 0
Swedish balks	2 12 6	...	3 0 0
Pitch-pine timber (30 ft. average)	6 0 0	...	7 0 0

Joiners' Wood.	At per standard.		
White Sea: first yellow deals, 3 in. by 11 in.	26 0 0	...	27 0 0
3 in. by 9 in.	24 0 0	...	25 0 0
Battens, 2½ in. and 3 in. by 7 in.	18 10 0	...	19 10 0
Second yellow deals, 3 in. by 11 in.	21 10 0	...	22 10 0
" " 3 in. by 9 in.	20 0 0	...	21 0 0
Battens, 2½ in. and 3 in. by 7 in.	15 0 0	...	16 0 0
Third yellow deals, 3 in. by 11 in. and 9 in.	16 0 0	...	17 0 0
Battens, 2½ in. and 3 in. by 7 in.	14 0 0	...	15 0 0
Petersburg: first yellow deals, 3 in. by 11 in.	23 0 0	...	24 0 0
Do. 3 in. by 9 in.	20 0 0	...	21 0 0
Battens	15 0 0	...	16 0 0
Second yellow deals, 3 in. by 11 in	17 10 0	...	18 10 0
Do. 3 in. by 9 in.	16 0 0	...	17 0 0
Battens	12 10 0	...	13 10 0
Third yellow deals, 3 in. by 11 in.	14 0 0	...	15 0 0
Do. 3 in. by 9 in.	13 10 0	...	14 10 0
Battens	11 10 0	...	12 10 0
White Sea and Petersburg—			
First white deals, 3 in. by 11 in.	16 10 0	...	17 10 0
" " 3 in. by 9 in.	14 10 0	...	15 10 0
Battens	13 0 0	...	13 10 0
Second white deals, 3 in. by 11 in.	14 10 0	...	15 10 0
" " 3 in. by 9 in.	13 0 0	...	14 0 0
Battens	12 0 0	...	12 10 0
Pitch-pine: deals	25 0 0	...	26 10 0
Under 2 in. thick extra	0 10 0	...	1 0 0
Columbian or Oregon Pine, best quality	23 10 0	...	26 0 0
Yellow Pine—First, regular sizes	50 0 0	upwards.	
Oddments	35 0 0	"	
Seconds, regular sizes	36 0 0	"	
Oddments	31 0 0	"	
Kauri Pine—Planks per ft. cube.	0 5 6	...	0 6 6
Danzig and Stettin Oak Logs—			
Large, per ft. cube	0 3 0	...	0 3 9
Small " "	0 2 6	...	0 3 0
Wainscot Oak Logs, per ft. cube	0 7 6	...	0 9 0
Dry Wainscot Oak, per ft. super. as inch	0 0 10	...	0 1 2
¼ in. do. do.	0 0 9	...	0 1 0
Dry Mahogany—Honduras, Tabasco, per ft. super. as inch	0 0 10	...	0 1 3
Selected, Figury, per ft. super. as inch	0 1 6	...	0 2 6
Cuba Mahogany	0 1 4	...	0 2 6
		upwards.	
Dry Walnut, American, per ft. super. as inch	0 0 10	...	0 1 2
French, "Italian," Walnut	0 0 10	...	0 1 4

WOOD (*Continued*).

Joiners' Wood (*Continued*)—	£ s. d.		£ s. d.
Teak, per load (Rangoon or Moulmein)	20 10 0	...	26 0 0
Do., do. (Java)	19 0 0	...	22 10 0
American Whitewood planks, per ft. cube	0 5 6	...	0 6 6

Prepared Flooring, etc.—	Per square.		
1 in. by 7 in. yellow, planed and shot	0 14 6	...	0 18 0
1 in. by 7 in. yellow, planed and matched	0 14 9	...	0 18 0
1¼ in. by 7 in. yellow, planed and matched	0 17 6	...	1 3 0
1 in. by 7 in. white, planed and shot	0 14 0	...	0 16 0
1 in. by 7 in. white, planed and matched	0 14 3	...	0 16 6
1¼ in. by 7 in. white, planed and matched	0 16 6	...	0 8 6
¾ in. by 7 in. yellow, matched and beaded or V-jointed brds.	0 12 6	...	0 15 0
1 in. by 7 in. " "	0 15 0	...	0 18 6
¾ in. by 7 in. white " "	0 12 0	...	0 14 0
1 in. by 7 in. " "	0 14 6	...	0 16 6

6 in. at 6d. to 9d. per square less than 7 in.

JOISTS, GIRDERS, &c.

	In London, or delivered Railway Vans, per ton. £ s. d.		£ s. d.
Rolled Steel Joists, ordinary sections	9 0 0	...	10 0 0
Compound Girders, ordinary sections	11 0 0	...	12 0 0
Steel Compound Stanchions	12 0 0	...	13 0 0
Angles, Tees, and Channels, ordinary sections	11 0 0	...	12 0 0
Flitch Plates	11 0 0	...	12 0 0
Cast Iron Columns & Stanchions, including ordinary patterns	8 10 0	...	9 0 0

METALS.

Iron—	Per ton, in London. £ s. d.		£ s. d.
Common Bars	9 0 0	...	9 10 0
Staffordshire Crown Bars, good merchant quality	9 5 0	...	9 15 0
Staffordshire "Marked Bars"	11 0 0	...	—
Mild Steel Bars	9 5 0	...	9 15 0
Hoop Iron, basis price	10 0 0	...	—
" " Galvanised	17 10 0	...	—

(*And upwards, according to size and gauge.)

Sheet Iron Black—			
Ordinary sizes to 20 g.	10 5 0	...	—
" " 24 g.	11 5 0	...	—
" " 26 g.	12 15 0	...	—
Sheet Iron, Galvanised, flat, ordinary quality—			
Ordinary sizes, 6 ft. by 2 ft. to 3 ft. to 20 g.	15 10 0	...	—
Ordinary sizes to 22 g. and 24 g.	16 0 0	...	—
" " 26 g.	17 0 0	...	—
Sheet Iron, Galvanised, flat, best quality—			
Ordinary sizes to 20 g.	18 10 0	...	—
" " 22 g. and 24 g.	19 0 0	...	—
" " 26 g.	20 10 0	...	—
Galvanised Corrugated Sheets—			
Ordinary sizes, 6ft. to 8ft. 20 g.	15 0 0	...	—
" " 22 g. and 24 g.	15 5 0	...	—
" " 26 g.	16 15 0	...	—
Best Soft Steel Sheets, 6 ft. by 2 ft. to 3 ft. to 20 g. and thicker	12 10 0	...	—
Best Soft Steel Sheets, 2 g. & 24 g.	13 10 0	...	—
" " 26 g.	15 10 0	...	—
Cut Nails, 3 in. to 6 in.	11 0 0	...	11 10 0

(Under 3 in., usual trade extras.)

¶ Have you ever thought how useful a typewriter would be in your office?

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¶ Estimates, specifications, quantities, requisitions, accounts, tabulated statements, correspondence, etc.,

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¶ Ten or twelve copies can be obtained at one operation,

thus saving much time usually employed in making duplicate copies by hand.

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DETAIL OF FACADE TO MOVNT PLEASANT WOMENS' WING

NOTE: BRICKWORK 2" WIRECVT ON FACE BRICKS SET 5 COVRSES TO ONE FOOT IN ENGLISH BOND WITH WHITE MORTAR; STONEWORK BEST PORTLAND WHITBED; BALCONY AND RAILINGS IN CAST IRON;
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4"x3" JOISTS
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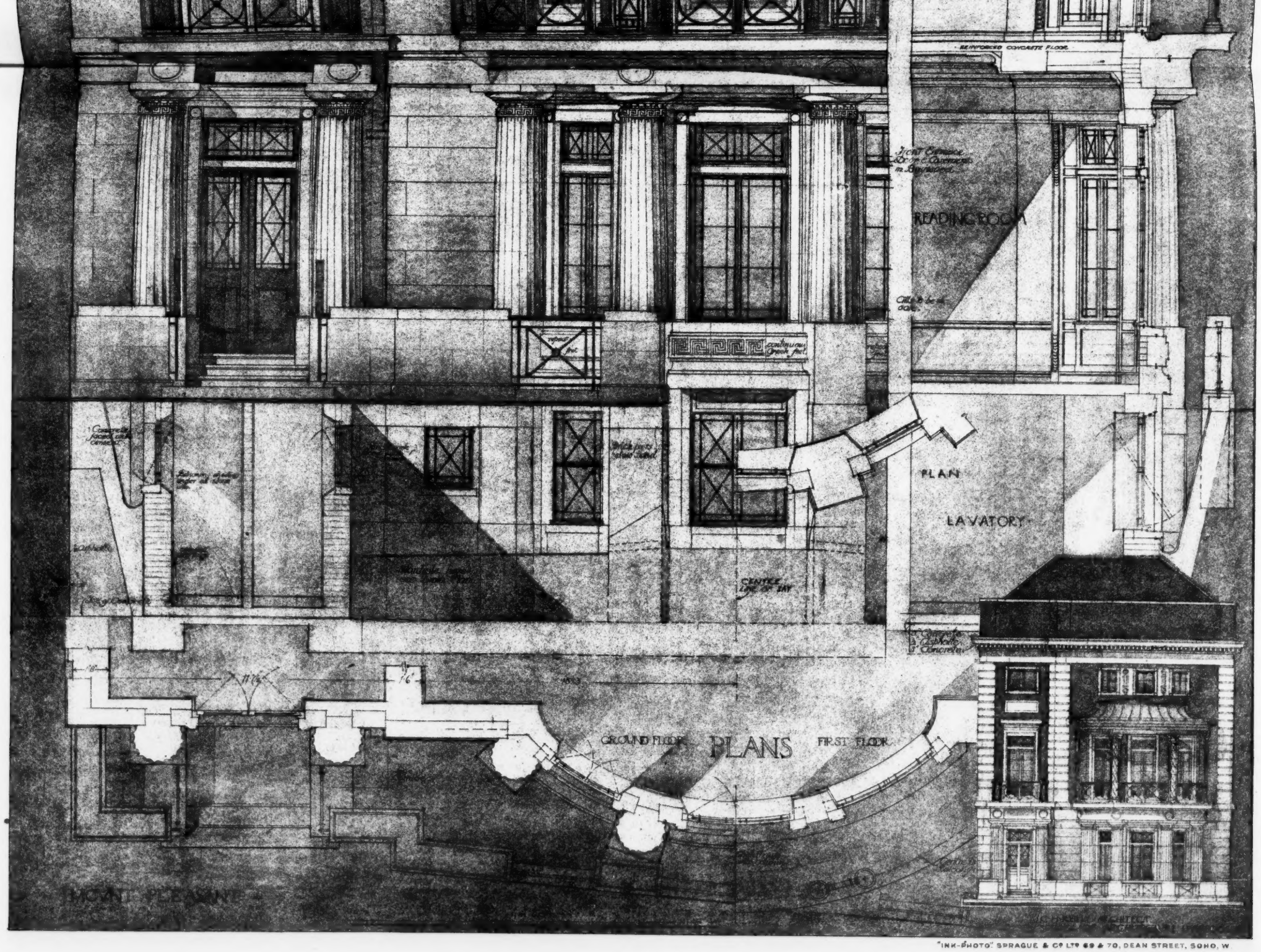
DINING ROOM
Balcony railings in Cast Iron.
REINFORCED CONCRETE FLOOR.



"INK-PHOTO" SPRAGUE & Co LTD 69 & 70, DEAN STREET, SOHO, W

UNIVERSITY OF LIVERPOOL: STUDENTS' CLUB.—PROFESSOR CHARLES H. REILLY, F.R.I.B.A., ARCHITECT.

(Royal Academy Exhibition, 1912)

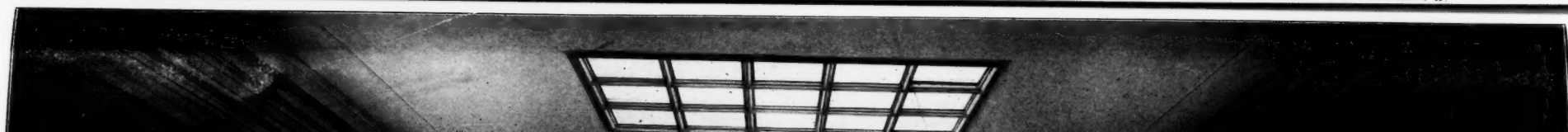
The principal room of the Liverpool Students Club.

GILMOUR HALL

C. H. Reilly, Architect, Liberty Buildings, Liverpool.

(Royal Academy Exhibition, 1912.)

Sprague & Co., Ltd., Printers, 69 & 70, Dean St., Soho, W.



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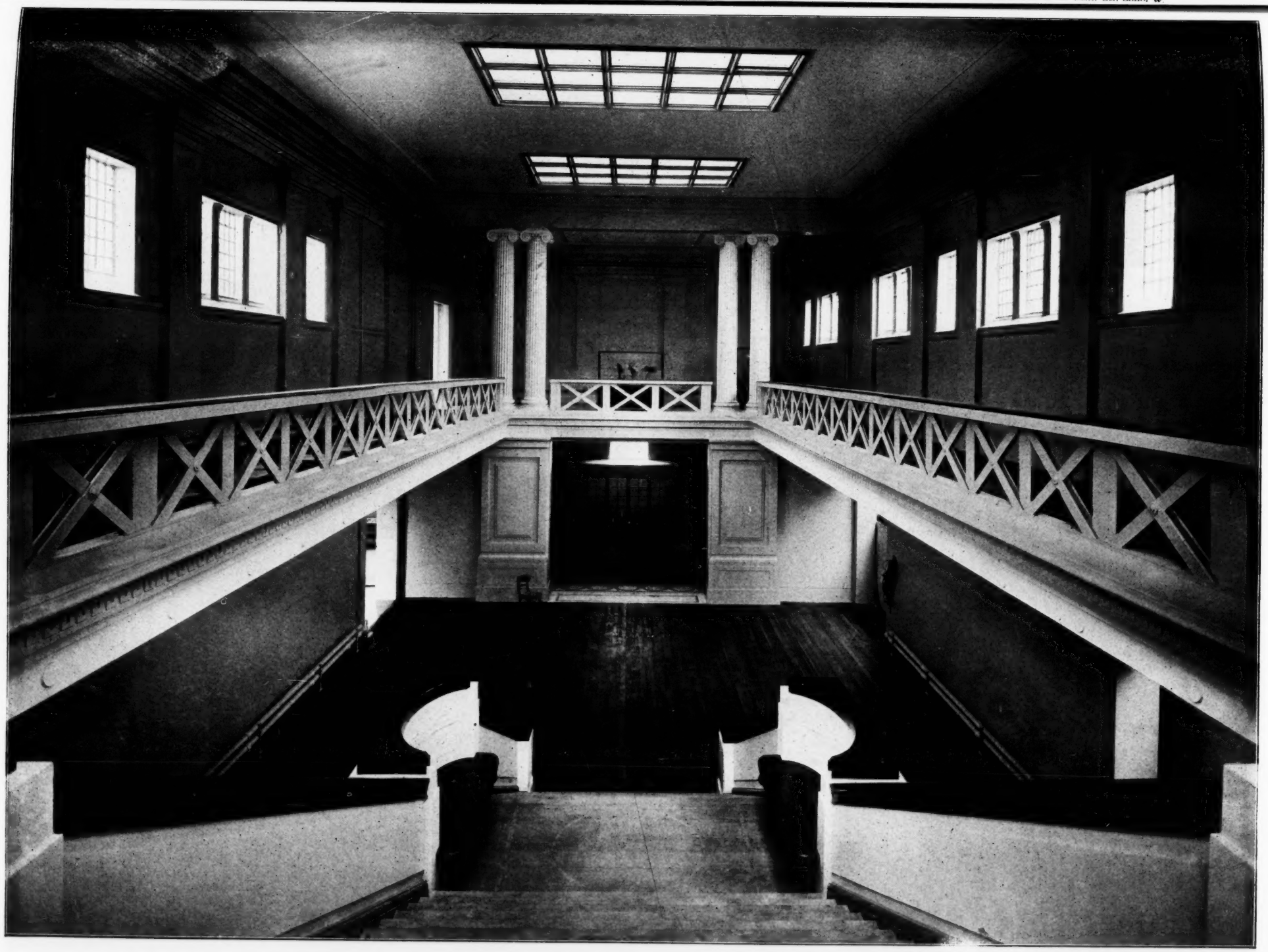

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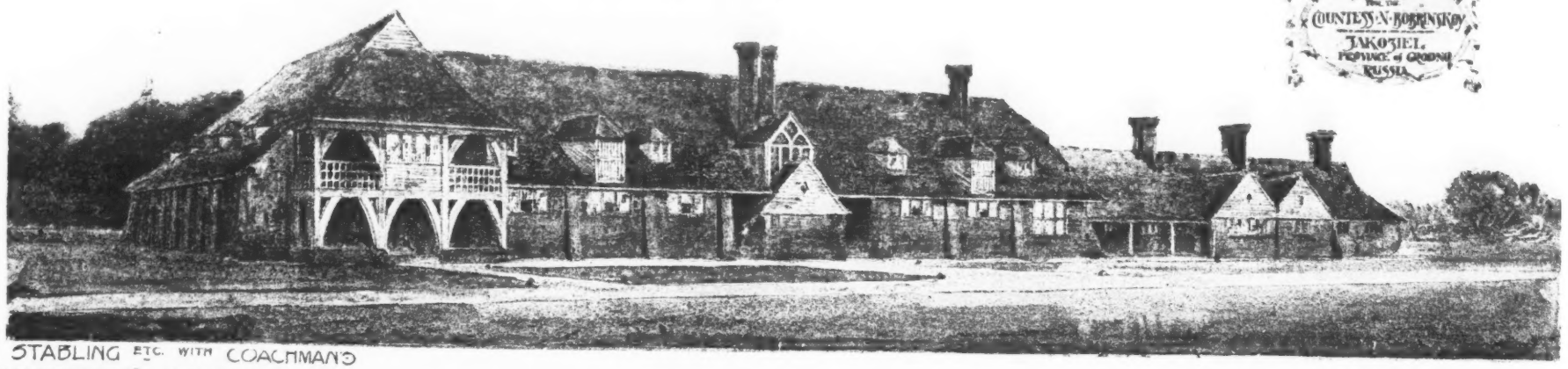
LEICESTER ART GALLERY EXTENSION.—Mr. Albert Herbert, A.R.I.B.A., Architect.

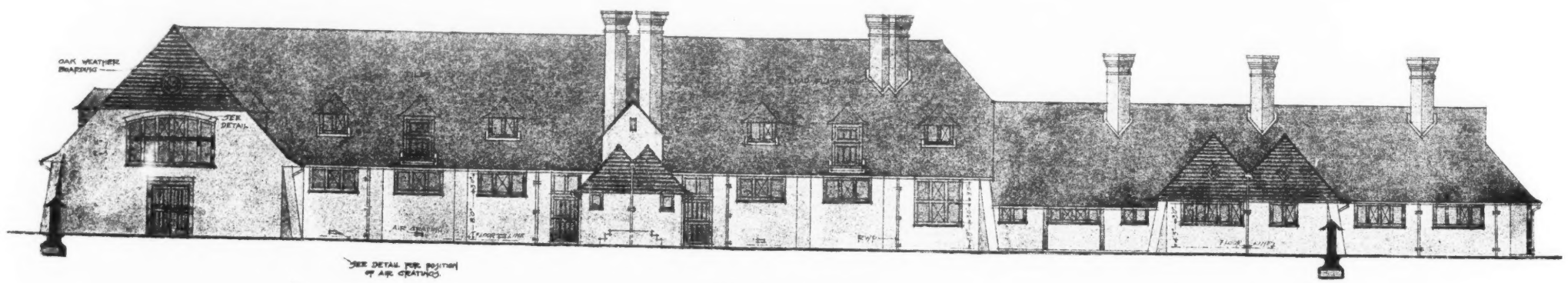


STABLES
FOR THE
COUNTESS N. BOBRINSKOY
ZAKOZIEL.
PROVINCE of GRODNO
RUSSIA

NEW STABLING ETC. WITH COACHMANS AND GAMEKEEPER'S HOUSE FOR THE COUNTESS N. BOBRINSKOY. AT ZAKOZIEL GRODNO. RUSSIA.

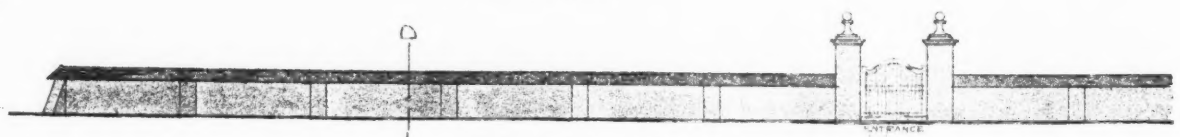
FEET 10 3 0 10 FEET 20 30 40 50 FEET 100 FEET 150 FEET.

SCALE OF FEET.



EAST ELEVATION
ENTRANCE FRONT

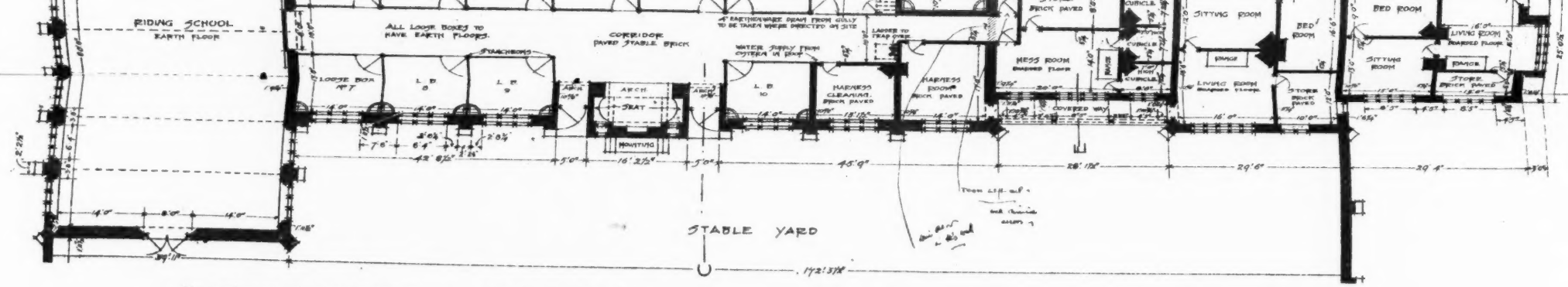
NOTE: IN ALL CASES FIGURED DIMENSIONS ARE TO BE WORKED TO IN PREFERENCE TO MEASUREMENTS BY SCALE.
16'.6" DENOTES 16 FEET 6 INCHES
R.W.P. = RAIN WATER PIPE
THOSE WINDOWS MARKED WITH A CROSS ARE THOSE ARRANGED TO BE OPENED.



PART ELEVATION OF WALL TO STABLE YARD

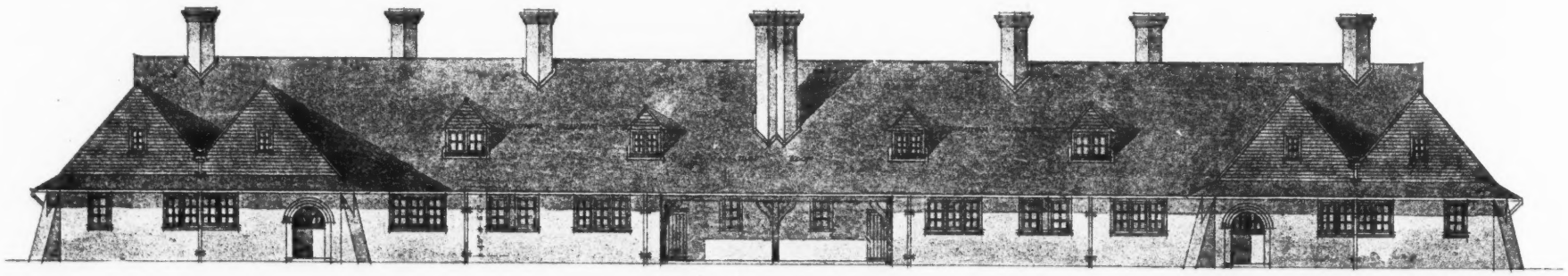
SECTION OF WALL TO STABLE YARD

NORTH

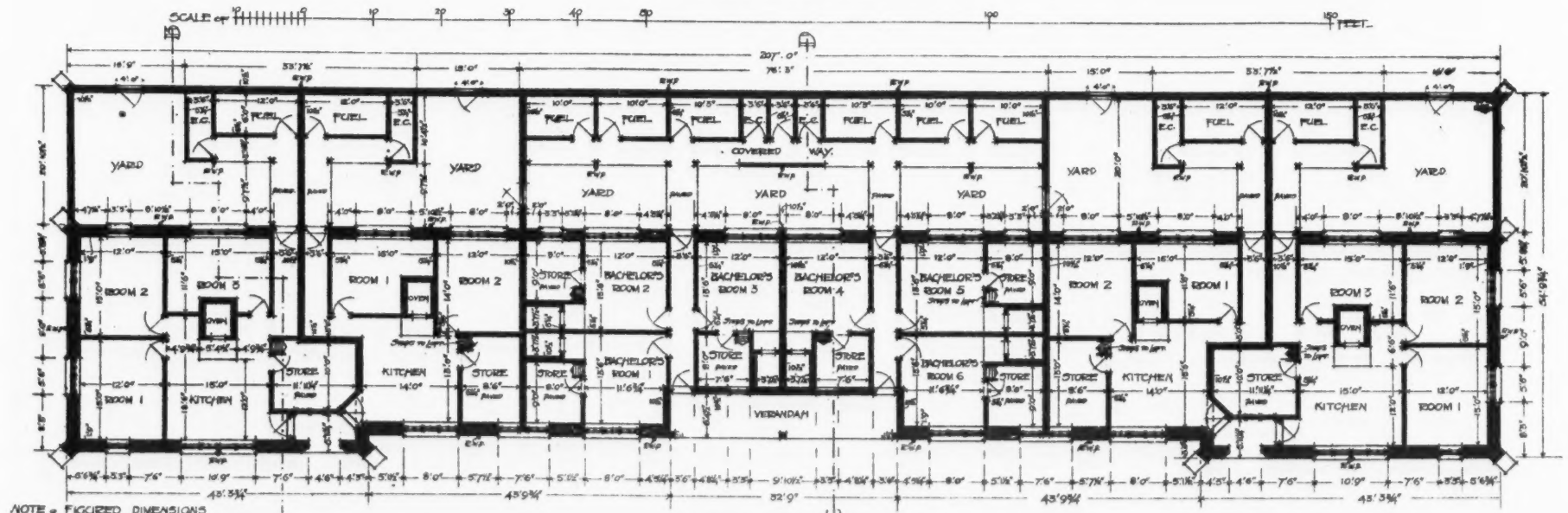


CLERKS HOUSE AT ZAKOZIEL GRODNO. RUSSIA.

FOR THE COUNTESS BOBRINSKOY :



FRONT ELEVATION



GROUND PLAN.

E. TURNER POWELL. F.R.I.B.A. ARCHT.
25 QUEEN ANNE'S GATE
LONDON. S. W.

INK-PHOTO SPRAGUE & Co LTD 69 & 70, DEAN STREET, SOHO. W.

BUILDINGS AT ZAKOZIEL, GRODNO, RUSSIA.—Mr. E. Turner Powell, F.R.I.B.A., Architect.

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VOL. CIV.—N

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THE BUILDER

A JOURNAL FOR THE ARCHITECT AND FOR ALL INTERESTED IN THE CONSTRUCTIVE & DECORATIVE ARTS

VOL. CIV.—No. 3663. APRIL 18, 1913.

THE EFFECT OF FASHION ON THE PUBLIC MIND.

IT is a trite saying that the eye can get accustomed to anything, that the wildest vagaries of dress or ornament can come to be so expected that their absence is a shock great enough to prevent the appreciation of a substitute on its own merit, or the improvement caused by the disappearance of a needless excrescence. The crinoline, which for twenty years altered the whole conception of the female form, is the most obvious illlustration of this law of the tyranny of fashion, but the law is not unfortunately confined to the world of dress. In literature it was fashion that dictated the tyranny of the couplet in serious verse throughout the eighteenth century; it was fashion that, in the words of Pope, compelled the artist from the days of Lely to those of Reynolds to make :—

> The fair one beautifully cry
> In Magdalen's loose hair, and lifted eye,
> Or drest in smiles of sweet Cecilia shine,
> With simpering angels, palms, and harps divine.

Fashion was the demon that whispered, "Visto, have a taste," that bade the eighteenth-century collector hunt for Chinese monsters and the dark "old" masters against whom Hogarth inveighed, or adorn a bedroom in the true Gothick or true Eastern taste. It is easy to laugh at the eighteenth century or the Victorian era, to see in the Chinese dragons on the mantelpiece of my lady's drawing-room in the second scene of "The Rake's Progress" the precursors of the lustres of the fifties; it is harder to apply the lesson *de te fabula*; but it is the bounden duty of all who, with some claim to historic knowledge, analyse the failings of the past to apply the same tests to themselves and their own day, and to recognise the new meanders that ductile Fashion, who is the true Dulness, takes under their eyes.

At the present moment the convention of unconventionality, than which no deadlier convention exists, is the enemy against which we have most sternly to contend. Academic convention, whether in art or letters, is at least based on a principle—the principle of the value of form; if it discourages spontaneous art, it sets some premium on sound workmanship, on that science of writing or painting which the greatest masters have preached and practised; it has an ideal based on the experience of the past which no true craftsman in art or letters can safely neglect. Unconventionality, adopted as a principle, sets no value on things hitherto accepted, disregards the good with the bad, and prides itself on originality—a word that is too often a cloak for carelessness of design and hastiness of execution, which are then apt to be taken as merits. The attempt to get an impressionist effect at the cost of finish, the treating of the sketch, even at its best, as the highest attainment of art, was, thirty years ago, the danger which Burne-Jones foresaw for English art when he made his modest and courageous speech at the Whistler-Ruskin trial; the Post-Impressionists of the day, the Futurists of, let us hope, an unattainable to-morrow, have changed all this. The desire of effect at the cost of good construction is the chief heresy of to-day, whether in architecture, art, or literature, of the journalistic type at least, and the effect desired is wholly one of fashion. The builder expects his customer to like "Art": he inserts meaningless patterns of coloured glass into misshapen windows: he avoids a plain surface wherever possible on a mantelpiece, a door-handle, an electric lamp; the ambitious artist outdoes his fellows in absurdity by disregarding the rules that have been held to govern art, and so directs attention to himself; the writer, knowing that what will sell has no relation to what will last, produces his twentieth book on the same or a similar subject; the journalist finds his market in headlines and blurred photographs. And the people love to have it so. Were there no public for the builder's "art," were there no purchasers for Post-Impressionist pictures, for "strong" novels or sentimental outpourings, for the vulgarisms of the halfpenny Press or the more expensive but not less harmful weekly, these things would cease of themselves; but while the public eye enjoys placards and the public mind is not revolted by derelictions from good taste, these things must and will continue, and it is not for an age of which the success of advertisement is the chief characteristic to make merry over the failings of its predecessors. Better by far the stately terraces and stucco fronts of Nash and Cubitt, with their unity of scheme and effect, than the vagaries of the garden suburb; better the academic and *démodé* art of Eastlake and Maclise than the Futurist agonies of to-day; better the stamp on newspapers which reduced their size and circulation than the betting news, the police-court revels, the publicity given to things in their nature private of our cheaper journalism; better the craftsmanship of Pope's successors, singing "things unattempted yet in prose or rhyme" in verse sound in construction if dull in effect, than the unrhymed irregular Pindarics—prose spoilt and verse not gained—of their predecessors, or the saccharine sentiment of their successors Laura Matilda, Thomas Haynes Bailey and L. E. L., all intensely popular in their own day.

"Yes," it may be said, "but it is only by revolt from academic art that progress can be made." True, but progress depends on the character of the revolt. It is seldom the extremists, or at least their extremer views, that help the cause of progress in the end. It was the steadily widening stream of other influences, the imitation of Spenser and the Elizabethans, the publication of Percy's "Reliques," the study of nature, whose chief evangelist was Thomson, that weakened the rule of the couplet and prepared the way for "Lyrical Ballads"; and there is more variety of metre in the six small volumes of Dodsley's "Miscellany," published about the middle of the century, than in the whole of Wordsworth. It was not the protests of Haydon or even of Ruskin that undermined the rule of academic art, but the growing appreciation of the work of men whose inspiration was drawn either from nature or from imagination, but who did not despise the drudgery of the schools. The leading influences in English architecture—Inigo Jones, the brothers Adam, Sir William Chambers, Wyatt, Pugin, Shaw—underwent a thorough training in the artistic education of their age, followed by prolonged study of those predecessors, whether the unknown builders of Diocletian's palace at Spalato, or Palladio, or more modern masters, whose principles they felt they must master before they could themselves enter on their task. The greatest of poets begin by speaking in a borrowed tongue; Shakespeare writes like Marlowe, Coleridge like Lisle Bowles, Rossetti like Browning. The most inspired of painters imitate their masters; Raphael draws his inspiration from Perugino, Leonardo from Verrocchio, the young Millais from Etty ("he taught all our school to colour," he said in later life); even the young Blake, that most intractable of visionaries, paints in the manner of that forgotten A.R.A., John Hamilton Mortimer, and goes to Reynolds for his opinion on his drawings. It is this humility, this readiness to learn from

the masters of his art before striking out for himself, that distinguishes the born leader of an artistic revival from the secessionist in art or literature, whose aim it is *épater les bourgeois*, who sees "the pedantry of courts and schools," and thinks that his own crude beginnings must be better than these because they are different, who mistakes impatience of control for genius and the desire of notoriety for an artistic mission. It was Wilde who said, "We can forgive anything to the founder of a school except the school"; it is harder to forgive the founder of a school who is no master, and it is he unfortunately who often most affects the public taste by force of keeping in the public eye. Curiosity begets interest, interest expectation, and to expect to find some quality in art or literature is to have that quality supplied.

The taste of the day is no criterion of the verdict of posterity; fashion that is based on the sand of opinion, not on the rock of principle, will pass, it is true, but it will not pass without its ill-effects on its own time. Fashion based on principle is a far rarer thing, a phenomenon almost, yet it does exist as fashion for a time before it passes into the law of custom. Because it was the fashion of men of their own age and class to take cold baths, Warrington and Pendennis fitted up their chambers in the Temple with the famous shower-bath that so annoyed Old Grump of the Norfolk circuit; that fashion has become a necessity as unquestioned as the use of forks, and we are apt to forget how modern both customs really are. The public expects to find a bathroom in a house or flat; it does not expect, much less require, that in matters of equal moment a standard of quality as well as of appearance shall be reached by builder or architect, artist, novelist, or poet. Better an ugly house which has the beauty of sound workmanship than a rough-cast imitation of the village green creations made popular in the pictures of Kate Greenaway and Caldecott, a "cottage of gentility" in which neither brick nor wood nor plumbing is good or even passable, but which catches the eye of the house-hunter as "so artistic"; better the honest work of Frith, with its purity of pigment and truth to nature, if to ugly nature, than the daub of a painter who would discard the experience of his predecessors and without being a child aim at the childish standpoint or represent things not as they are, or ought to be, but as he conceives they are in their essentials. To despise his medium, to express in terms of one art what belongs to another, is the mark of the charlatan; and it is the charlatan, the extremist, who too often influences contemporary taste. The jaded mind seeks for excitement; excitement is supplied by fashion; and when the fashion has become a convention it is time for the seeker after truth to vindicate his cause, and to protest that fashion is not art unless it stand on principles, which are conventions known by the experience of ages to lie at the root of truth and beauty.

LONDON UNIVERSITY REFORM.

THE Royal Commission on University Education in London has now completed its labours and has issued a final report on the present constitution of London University. The Commissioners consider the whole organisation of the University fundamentally defective, and that, as at present constituted, it is not calculated to promote the highest interests of University education in London.

Far-reaching and comprehensive changes are proposed which, no doubt, will meet with much opposition from vested interests. It is the fate of all reforms. But we think that all intelligent people will agree that so bold and comprehensive an attempt to create a properly co-ordinated and organic entity out of the scattered and unrelated educational establishments of London is a move in the right direction.

The Commissioners put forward certain views as to the essentials of a University which we imagine will not be controverted. The students must work in close association with their fellows and with the students of other faculties, and with their teachers. University work should differ in its value and aim from that of a secondary school or a technical or professional school. Close association of undergraduate and post-graduate work is essential, and all proposals tending to their separation are injurious to both.

In order to render such an ideal possible, the Commissioners consider it is of great importance that the constituent colleges and University departments should be grouped together, so that a University quarter may be formed. Although London is too large to be turned into a University town like Oxford or Cambridge, where the town is dominated by and dependent on the University, and where the University buildings may be scattered about the different quarters of the town without any loss of the sense of unity, the Commissioners point out that it would be quite practicable to create a quarter in London where University life may grow and flourish, and where the teachers and students may breathe the atmosphere of a seat of learning.

It is, in our opinion, impossible to exaggerate the importance of this recommendation. Considering the vast size of London, its cosmopolitan atmosphere, the variety of its interests, and the dominating commercialism of its outlook, the followers of the purely intellectual life are in a minority. Scattered about its immense area in small units they are more than liable to be stifled by the unsympathetic and antagonistic atmosphere around them. Collected together in a quarter devoted to the pursuit of learning, they would find themselves sufficient in number and influence to hold their own against the surrounding forces of materialism.

This recommendation has also great value from the architectural point of view, and has a bearing on our ideas for the future development of London. It has often been pointed out that, though London has many fine individual buildings, yet, scattered about as they are in various directions, with no proper relation to one another, their total effect is negligible. Although Bedford College and other educational establishments have lately put up buildings not devoid of a considerable amount of architectural merit, they have only the effect of isolated units. There is no architectural effect in London in any way expressive of its intellectual life, or of the devotion to abstract learning which animates a not inconsiderable minority of its inhabitants.

This expression of the intellectual life of London can only be adequately realised by a group of central University buildings, surrounded by a University quarter. This quarter should, we think, be in the heart of London; but, considering the enormous value of land, it is difficult to see how the suggestion is to be carried out, but it is quite obvious that the Bloomsbury site is ludicrously insufficient. When we come to consider a site for University buildings in any way expressive of the fine comprehensive scheme put forward by the Commissioners, we are driven to the conclusion that sufficient space can only be found on the south side of the river. This journal has already put forward a suggestion for the development of this central district as an Imperial quarter, dominated by the Imperial Parliament House of a Federated Empire. Into such a scheme as this the University of London should fit, and there should be a possibility of designing the University quarter desired by the Commissioners, at a cost which would not be prohibitive. The suggestion has already been made in several quarters, and, at present, it seems to hold the field.

The report of so strong a Committee can hardly be ignored, but the probability is that for some years to come London University will be too much occupied in setting its house in order to have much time to spare for the consideration of buildings or of site.

Indeed, this seems to be the only logical way of dealing with the situation. The arrangement of a building, or of a group of buildings, depends on the arrangement of the institution whose functions and needs it expresses. Whatever defects of organisation are apparent in the institution will be reflected in its buildings. It is obvious that if a group of buildings be now designed to suit the requirements of the present constitution of the University they will not suit the requirements of that constitution when revised in harmony with the suggestions of the Commissioners.

These suggestions entail the creation of a complete and organic institution representing the intellectual life of the Capital City. Such a complete and organic body can be fitly expressed by a complete and organic building or group of buildings, but not until its nature is known. This contemplated reorganisation will determine the number and size of the general lay-out of the buildings required, but, until this is known, any definite selection of a site is somewhat premature. But, at any rate, it is useless to select one because it seems to suit the requirements of a University which, according to the report, is fundamentally defective in constitution.

A dignified group of University buildings in the centre of a University quarter is no doubt essential to the full development and perfect expression of all that a University stands for; but before a site can be selected it is necessary to know approximately the number and nature of the buildings to be placed upon it. Before this can be known the constitution of the University itself must be settled. We congratulate the Commission on a great work brought to a successful conclusion.

NOTES.

Admiralty Arch—a Suggestion.

LORD ALEXANDER THYNNE writes an interesting letter to the *Times* with reference to the Admiralty Arch competition. Quoting with approval the result obtained by the appointment of an expert committee to advise on the treatment of Regent-street, he advocates a similar procedure in this case. His suggestion is supported by the *Times*, which considers that a strong committee of five or seven persons, representing the profession of architecture, the London County Council, the Treasury, and persons whose judgment in matters of taste commands respect, might settle the matter in a month. We are inclined to think that this suggestion is a step in the right direction, if only as a means of getting the matter considered without further delay. There is no doubt that such a committee, if composed of architects specially qualified to deal with this subject, should be able to decide the right architectural manner of treating it, and in this sense they might be able to settle the matter in a month; but not in the sense of producing an actual design. Committees may advise, but they can hardly create. Possibly the best way to deal with the question would be for the three bodies who will pay for the scheme—the Government, the London County Council, and the Westminster Council—to appoint a mixed committee to consider the whole question from every point of view. Having collected all facts bearing on the subject, and having come to a conclusion on the economic and other governing factors of the problem, they might institute a public competition for the actual design itself.

R.I.B.A. Prizes and Studentship Drawings, 1914.

WE have before us particulars of the various subjects set for the R.I.B.A. Students' Prizes for 1914, the new feature of which is the Henry Jarvis Studentship, value £200 a year, tenable for two years at the New British School at Rome, the candidates for which must be British subjects under the age of thirty, who are either Associates or students of the R.I.B.A. The competitions for the Studentship will be held in conjunction with the competition for the Scholarship tenable for three years at the School at Rome. Candidates will have to go through two competitions, of which the second will be held in the autumn, three months after the first. From the candidates first competing the Committee of Examiners will select not more than ten to enter the final competition. The time allowed for the preparation of the final design will be two weeks, and the candidate placed highest will be awarded the Jarvis Studentship, unless he prefers to take the Commissioners' Scholarship, which is offered by the Royal Commissioners for the Exhibition of 1851. The Soane Medallion and £100 will be awarded to the best design for an "Official Country Residence for a Royal Personage in the United Kingdom," the design to include the laying-out of grounds. The Tite Prize (certificate and £30) will be awarded for the best "Imaginative Composition in Perspective in the Italian Style for an Important Fountain with which is to be associated large sculpture," the architectural treatment to be in accordance with the methods of Palladio, Vignola, Wren, or Chambers. The Grissell Prize (gold medal and 10 guineas) will be awarded to the best design for a four-story dockside warehouse. The other well-known prizes need not be mentioned here, since their subjects are well known to students and to the profession. We trust that the foundation of the British School at Rome and the Studentship connected with it will have a beneficial effect on our national architecture.

French Government and Artists' Copyright.

THE Under-Secretary for Fine Arts, M. Léon Bérard, is to take administrative action in the matter of copyright, which has been in dispute between artists and the State for over fifty years. An end is to be put to the system whereby the State, when acquiring a picture or statue for the National Museum, also becomes the possessor of all copyright in such works and permits its free reproduction, a system which has not worked satisfactorily. Art publishers who have gone to considerable expense in preparing good engravings of national pictures in the past have seen their market taken from them by cheap mechanical reproductions of rival firms. Thanks to the action which is being taken, publishers protected by the artists' copyright will be able to spend money on engraving good plates after national pictures. The State will, however, still preserve the right to allow art students to copy pictures for educational purposes. The whole question of artistic copyright is a difficult and complicated one, more especially with regard to architectural works—indeed, we question whether the new enactments of the Act recently passed in this country will prove to be of great benefit to the profession. Still, they doubtless constitute a move in the right direction, as they involve a recognition of the value of art and the fact that even the artist is worthy of his hire!

The Scapa Society and Advertisements.

WE are asked by the Scapa Society to call attention to a Bill "for the amendment and extension of the Advertisements Regulation Act of 1907," which was introduced in the House of Commons on February 15 by Captain the Honourable Arthur C. Murray, M.P., and was very strongly backed. The powers of regulation conferred by the proposed measure include powers to regulate the size, colour, and material of the letters or device forming an advertisement and its height above the ground, and the local authority, in making such by-laws, may have regard to the size and situation of buildings of all kinds and descriptions on which it may be intended to exhibit advertisements. Where complaint is made to a Court of Summary Jurisdiction that any advertisement exhibited in or on or within any building visible to the public is of a repulsive or demoralising order, the Court may require the person for whose benefit such advertisement is exhibited to remove or destroy it forthwith, and, if such order is not complied with, such occupier or person shall be liable to a penalty not exceeding £5. This Bill proposes to amend and extend the Advertisements Regulation Act, the justification for which is stated to be the difficulty in determining the proper limit and powers of local authorities under it. The limitations of the present Act are stated to be very narrow, and the growth of public opinion on the subject is said to have been great. Power is given to prohibit the advertisements on land which do not refer to the land on which they are exhibited. Public authorities may prohibit "alien" advertisements in rural and residential areas, and regulate those in the business parts of a district. These clauses would serve to eliminate the tin animals which give variety and interest to some of our southern railway lines as well as the medicinal reminders which confront us in other quarters. We should warmly welcome legislation of such a nature, but we should, in addition, like to see the advertisement placards taxed as they are in foreign countries.

King's College Hospital Site.

THE Metropolitan Water Board, who were said to be thinking of acquiring King's College Hospital site, have not done so, and we understand that arrangements have been practically completed for leasing it to Messrs. W. H. Smith & Sons on a ninety-nine years' lease, subject to a clause binding them to expend £100,000 in building on the site. As is well known, the site came into the market in consequence of the decision of the Governors to move the hospital to Denmark-hill. The use to which it is proposed to put the site is one for which it is better suited than for the erection of a large block of public offices such as the Metropolitan Water Board require, since it is somewhat tucked away in the maze of streets which lie between Lincoln's Inn-fields and the Law Courts.

The Anglo-German Exhibition.

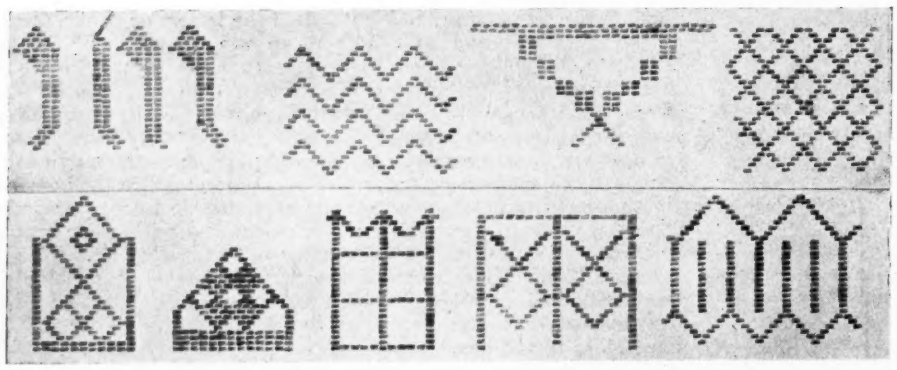
WE are asked to call attention to another exhibition—the Anglo-German Exhibition—which is to be held at the Crystal Palace from May to October of the present year. A large and influential Committee has been formed, and it is hoped the exhibition will promote amity and good feeling between the two nations. An effort is to be made to improve the means of access to the Palace, and we understand every endeavour will be made to render the Exhibition attractive. We may perhaps be forgiven if we venture to express a hope that the Exhibition will not result in the adoption of the more modern forms of German decoration in this country. Their originality is undoubted; but do we always like originality?

"The Gateway of India."

IT is proposed to commemorate the landing of King George in India by the erection of a gateway, which is to be called "the Gateway of India," of which structure Lord Sydenham, the Governor of Bombay, laid the foundation-stone last March. The gateway is described as being intended to be built in "shining white marble," and its architecture as "mixed Hindu and Moslem." From an illustration in the *Sphere* it reminds us more of some of the architectural efforts we see carried out in cement in the earlier Victorian suburbs of London, and might well be an amateur's *chef d'œuvre*; indeed, unless the illustration we have seen is libellous, we feel it would be infinitely better for the reputation of our race that it should never be built. Marriage has been termed the "picturesque gateway leading to a commonplace estate"; the "gateway to India" may be described as a "commonplace gateway to a great Empire." The latter is an achievement of our race which one would imagine would inspire the designer with ideas, if anything could do so. Even the "mixture of style" so feelingly alluded to has failed to produce any effervescence in the designer's imagination!

Mr. Statham's "History of Architecture."

WE are glad to see in the *Month* of March 19 a most appreciative notice of Mr. Statham's new book. It rightly remarks that "a certain knowledge of architecture is definitely exacted now of all those who would hold themselves educated; and it adds so enormously to the joy (and incidentally, we confess, to the vexations) of life that all reasonable people will want to get and give it. That is why we ask to see this book in all school and college libraries, and given as prizes and made the text-book, as it were, of richly-illustrated lantern lectures, which shall develop it chapter by chapter." It adds that the book will thus show "what the great men of the past have bequeathed to us, and what the little nowadays folk are lamentably failing to do." A description of the contents of the book follows, with a word of criticism of the running headlines as to which we are in agreement, but it is very pleasing to meet with so understanding and pleasing a criticism of a very fine work which, we trust, will run to many editions and be of the greatest value to lovers of architecture.



Examples of Diaper Work in Brickwork.

LEICESTERSHIRE BRICKS AND BRICKWORK, OLD AND NEW.*

THE surface of Leicestershire is for the main part covered with clay, and following well-known laws the buildings are constructed of the material upon which they stand, therefore the exterior of these buildings consists of clay units burnt to resist the ravages of time and weather. With truth it may be said that Leicestershire is or most certainly was prior to the advent of railways (that simple means of transit) a brick county.

The clay covering referred to is of three types—the glacial or boulder clays, the Kemper marls on the west side of the county, and the Lias clay to the east. Bricks made from the glacial clays may always be recognised by their inclusion of flints and pebbles, the marls and Lias clays being free from these impedimenta. It is interesting to find from an examination of local Roman and mediæval bricks that the boulder clay was invariably used. An examination of the samples will support this statement.

The tenacious character of the boulder clay is well known to engineers, farmers, and other users of puddle; a simple experiment of making clay balls and soaking them in water also gives one a good idea of the superiority of this clay from a tenacious point of view.

As is generally known, the weathering of clay has an important effect upon the finished brick. Not being a practical brickmaker, I am at a loss to know the whole duty performed by weathering beyond the fact that it disintegrates the mass and makes the clay "kinder to work."

It is said that the Roman bricks owe their superiority to the fact that, in addition to the clay having weathered a glacial epoch, it was also allowed by the getters to weather for two winters before being made into bricks.

Two other factors which have an important bearing upon the finished brick are the dimensions and the method of burning. It is obvious that within reasonable limits small dimensions will ensure a product more thoroughly burnt and more true in shape than if the dimensions are large.

The bricks in the Roman Jewry Wall average about 18 in. by 12 in. by 1½ in., while those of the mediæval examples, such as Kirby Castle (1476), Bradgate House (1502), average 9½ in. by 4½ in. by 2½ in. It is rather later that we arrive at the age of the thin brick.

The size of a brick is governed somewhat by its facility for handling, and also to ensure a bond. The latter evidently only affects two of the dimensions, but it is the third dimension, the thickness, that embraces a good deal of the interest in brickwork. Apart from æsthetic considerations, which may be open to differences of opinion, there can be no doubt that from a constructional point of view the thin brick has an advantage in the retention of shape and the superiority of the burning.

With regard to the second point, the method of burning, I suppose that all early bricks were clamp burnt, this being obviously the primitive method of baking the bricks. This method is open to serious objection inasmuch as it was wasteful and produced some weird shapes, but it had the advantage of producing an infinite variety. I am not for a moment advocating a return to clamp-burnt bricks.

The mediæval builders did not, I think, use fluxed headers for choice, but from necessity, owing to the excessive numbers produced. We see as time goes on, and they become more proficient in making bricks, they omit to a large extent the diaper ornament formed by these bricks. In illustration of this contrast the wall at Leicester Abbey (fifteenth century) with later work.

The adoption of our local clay for permanent building was first accomplished by the Romans during their occupation of Leicester. They were past-masters in the art of brickmaking, and succeeded in making bricks which were superior in many ways to any that have been made since.

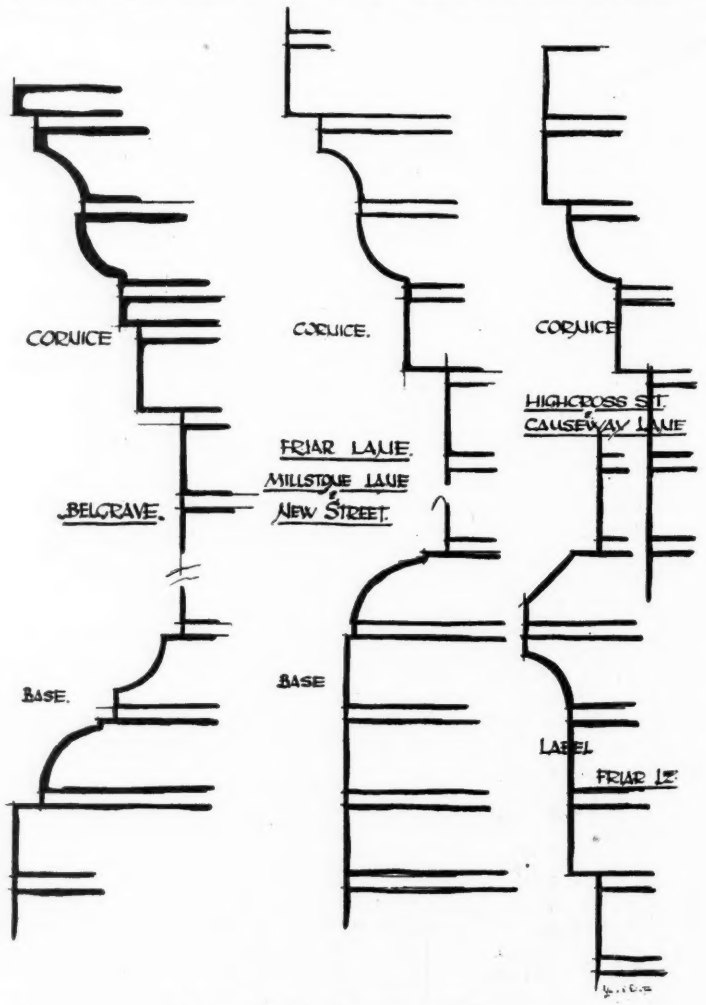
To one who has not studied the history of this period it appears strange that the manufacture of bricks should have entirely died out after the departure of the Romans, considering the degree of success which they achieved with the material, but the different mode of life led by the Saxon one supposes amply accounts for the break in this art.

Although locally we have examples of the potter's art of this period, it is quite certain the few bricks used in later years by the Saxons were of Roman manufacture.

From Roman times until the fifteenth century very little brickwork seems to have been done, not only locally, but throughout the country. The Romans, although making such an excellent brick, did not develop a brickwork as we know it to-day. This method was introduced by the Flemings during the thirteenth century, the earliest work of note now remaining being little Wenham Hall in Suffolk, dating from the end of the thirteenth century. Owing to the bricks being of various shapes and sizes it is suggested they were not made purposely for the work, but imported by the Flemings.

During this later period there was developed a more scientific bond. The brick was given far more importance by an increase in thickness and a corresponding decrease of the joint. In the Roman work the joint invariably approached the thickness of the brick. In the later work it is exceptional to find joints exceeding ¾ in. generally, averaging about ½ in. In contrasting the bricks the Roman variety are very uniform in colour, extremely hard, and in the form of slabs. The mediæval type vary in colour, are of a sandy nature, comparatively soft, and in sizes suitable for bonding. The insignificance of the brick and incidentally the excellency of the mortar in the Roman work is well shown in the Jewry Wall.

The very interesting work at the Abbey is the remains of a wall built by Abbot Penny (afterwards Bishop Penny) in the latter part of the fifteenth century. It is not part of the original fabric of the Abbey, St. Mary de Pratis, which was founded by Robert Bossu, second Norman Earl of Leicester, in 1143. There is a record in Nichol's "History of Leicestershire" of the Abbey gates being "newly built with brick" about a century earlier by Abbot Clowne, but none of this work or that of the original Abbey now remains. The profusion of diaper ornament on this wall is very characteristic of the period, and, being so little known even locally, I thought it of sufficient interest to make fairly complete sketches. Some types show they did not consider the bond of supreme importance, but otherwise the diversity of design is pleasing and rather exceptional; at the same time, it is typical of the Gothic workman. The initials of the builder, John Penny, appear about the middle of the wall. I am not able to give definitely the significance of the characters to either side of the opening. As an instance of the soft nature of the bricks on the inner face of the wall are hundreds of nails driven into the bricks, obtaining a better hold than they would in the mortar. The joints, now much weathered, originally showed about ½ in., and the courses rise four to the foot. The work, as usual at this period, is in English bond. There are no moulded bricks used, and the wall has a rubble base.



Various Brick Cornices and Bases.

* A paper by Mr. N. B. Robertson, A.R.I.B.A., read before the Leicester and Leicestershire Society of Architects at a meeting held on March 14.

A building of exceptional interest of this period is Kirby Muxloe Castle, built by Sir William Hastings. Even in its present state it presents a massiveness not usually associated with brickwork. Here also at the Abbey there is, as shown by the photographs, a profusion of diaper ornament with the initials "W. H." and the monogram of the builder. In this example the bonding does not suffer for the sake of the ornament to such an extent as in the Abbey wall. Of special note are the three spiral staircases, which, although very simple in conception, are very intricate pieces of brickwork. The idea is a spiral barrel-vault springing from the enclosing wall and impinging on the central shaft. There is a remarkable difference in the construction, evidently arising from different workmen being employed. In turning the arch on to the central shaft it was necessary to use very thick joints at the extrados to avoid the skewback getting too flat. In one case this was done; in the others the joints were kept an even thickness and the deficiency made up periodically by the insertion of a "gusset" piece. There are a few moulded bricks all of one type, a hollow chamfer, to the fire opening and door jambs, otherwise the mouldings are worked in stone. Kirby is to a large extent a copy of Tattersall.

The ruins of Bradgate House, built in the early sixteenth century, was, as far as character of work goes, a copy of Kirby, but the fact of fortifications being unnecessary materially altered the arrangement and plan.

It is worthy of note that during the Gothic period the men who were accustomed to rather complex mouldings in stone, when adopting brick as a medium, rarely attempted moulded work in any degree of elaboration. They were content to use the bricks in large masses, and succeeded in obtaining a breadth of treatment worthy of the material.

During the Georgian period brickwork developed under the domination of the Renaissance, and the work as careful workmanship was admirable. The details shown are of the earlier period, and the work has a simplicity and charm which was lost in the later work, abounding as it does with cut and carved brickwork, forming pilasters, cornices, panels, swags, etc. Even in the early work there was a tendency to reduce the thickness of the joints, but this developed until the joint was represented by a line of putty, now, fortunately, almost extinct.

The mouldings before the use of cut bricks were always of the type illustrated. It is very interesting to note that these few types of moulded bricks were used throughout the country with very little variation; locally in the older streets of the town and in most villages there are examples of one or more of these types.

The Flemish bond was introduced at this time, and was soon used almost to the exclusion of the older English bond. It also became the practice to use Flemish bond up the jambs of and underneath the openings, filling the remainder—that is, the piers—with a commoner brick of a lighter colour in heading bond. There are particularly good examples of this in St. Martin's and also in Highcross-street.

It is the Georgian period that we look to for the best brickwork, but it was also during the latter part of this time that the brickwork was brought to such a degree of refinement so unsuitable for the material that the fashion to cover it with plaster was the best thing that could happen, and it enabled a further degree of refinement to be legitimately accomplished.

In comparing the old brickwork with the work done more recently one is struck by the uniformity, not of the new work, but of the old. It is, of course, quite patent that the individual work of the present day is often what has been described as "deadly uniform," but that description only applies to each building. Taken as a whole, we have a very complex brickwork. In the old work a simple variety was attained in each building, but in the aggregate and taken over several centuries the work was more or less uniform in character. This uniformity was due to a natural standardisation far more effective than the present one.

Another obvious difference is in the thickness of the bricks. Until the nineteenth century there were no bricks made approximating the 3-in. and 3½-in. we are, or rather have been, accustomed to locally.

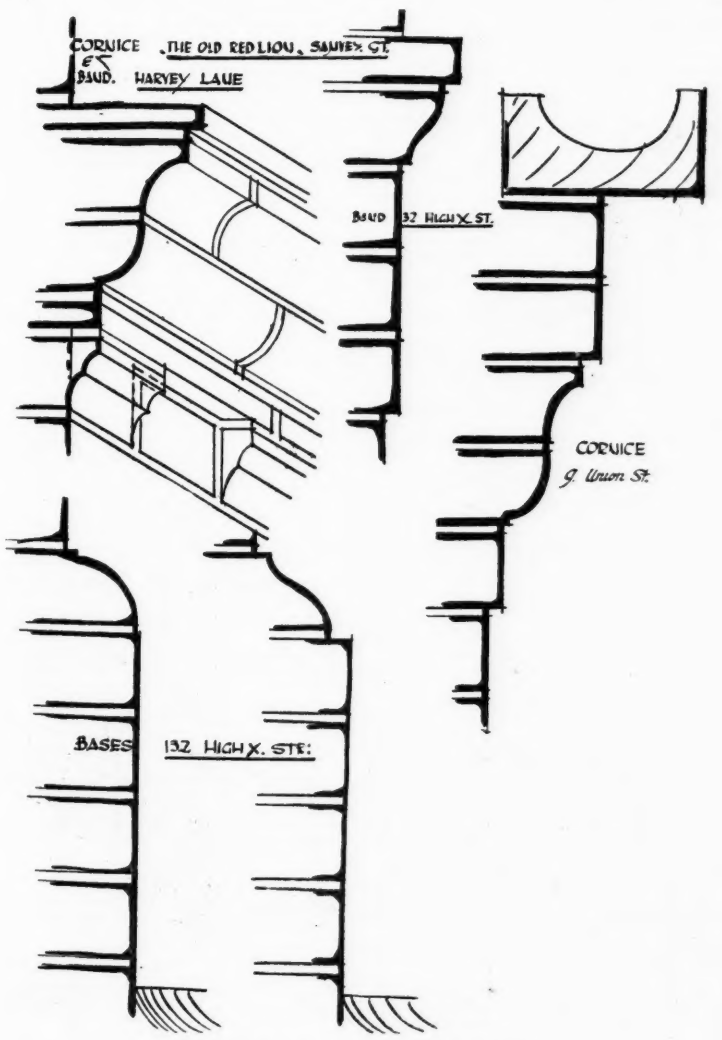
Gwilt records bricks being made of abnormal sizes to evade the brick tax, and the subsequent legislation to limit the size to 9 in. by 3 in. by 4½ in., which became a "statute" brick. But this had little to do with the general adoption of this thickness, it being an economic question, as undoubtedly a 3-in. brick works out cheaper in walling.

A great many of the faults in our present brickwork can be put down to those modern evils, competition and the British workman; but there are a few which remain to be saddled on the architect. He generally specifies a "perfectly true" brick, thus encouraging the manufacturers to spoil his material by pressing it. It was owing to this general specification, and also, of course, to competitive methods, that we had that very inferior brick, the dry-process type. As far as Leicester is concerned, it was not a success, and none are now being made. Another common error is in designing the work to forget the material and to figure the dimensions in feet and inches. I know it is fairly common practice to figure the smaller piers in bricks, but the whole wall surface and particularly window-openings should be considered—it is an error seldom found in Georgian work, the bond being as good under and over openings as elsewhere. In this we have a lesson to learn from the smaller and speculative builders; it doesn't pay to cut bricks. Cottage buildings of twenty or thirty years ago have the bond set out, and the openings arranged to suit, often the only cut bricks being the closers. But I am afraid the essentially modern type are rather prone to change the setting-out of the bond on the least provocation. A careful setting out of the bond avoids cutting, and prevents the accumulation of bats on the scaffold, which the bricklayer feels and in many cases is impelled to bury somewhere to the detriment of the walling.

The brickmaker, generally speaking, produces a very indifferent brick from an æsthetic point of view. At the same time, it is not fair to blame him; he is only supplying a demand. But when we remember he is using in most cases (all the better type of local bricks are made from the boulder clay) similar material to that used for all the ancient bricks, we realise how little we have progressed in this direction since the Romans. There is one point on which we have legitimate cause to complain—that is taking advantage of the nature of the local clay the weathering process is omitted. The manufacturers I know point out that this clay has been efficiently weathered during a glacial period. Personally, I would prefer it being done rather more recently, as undoubtedly if the process was reintroduced, even with the press and wire-cut machine, we should obtain better bricks—as shown by this piece of brick made from the same material as the Gipsy Lane common brick, with the difference that the clay has been weathered. It is neither possible nor desirable to return to the old methods of producing bricks; at the same time, there is ample room for improvement in our present methods. On these lines it would be of considerable interest to have experiments made on a fairly large scale by producing bricks of a pleasing texture and colour by a preliminary treatment of the clay and the use of a different type of kiln—the Hoffman type certainly has a bad effect on the colour.

May I make a few remarks on the design? Brickwork, to warrant the term "good," needs, in addition to good workmanship, careful thought on the part of the architect. As it consists of small units, these should be emphasised according to the scale of the building; moulded work should be simple. Surface ornament, such as bonds of different coloured bricks, diaper and herringbone work, are, of course, quite legitimate means of expression in this material. The type that remind one of inlaid linoleum patterns are not satisfactory—the design should emphasise the bond. The question of joints is entirely one of workmanship. The main use of mortar is to keep out the weather and to form a cushion or bed for the brick. For this latter reason the thickness of the joint should vary with the greatest expected inequalities of the bed of the brick. A wide joint, in addition to having a better appearance, allows the trowel to slightly compress the mortar, which pressure is essential for obtaining a protective surface of lime. The "weather joint," as far as the name is concerned, is a fetish, a flush joint answering the purpose equally as well. The numerous examples of recessed joints prove that, providing the bricks are properly made and burnt, frost does not affect them.

[The lecturer acknowledged his indebtedness to Mr. Fosbrooke for some excellent photographs of Kirby placed at his disposal.]



Various Brick Cornices and Bases.

THE ARCHITECTURAL ASSOCIATION :

SIXTH SPRING VISIT, TO THE WAR MEMORIAL AT ETON COLLEGE, SATURDAY, APRIL 5.

THE last of the Architectural Association spring visits proved also one of the most attractive, and a rather larger proportion of members than we usually have with us on these occasions assembled at the appointed time at Paddington Station to visit the now well-known Memorial buildings erected to the memory of Old Etonians who fell in the South African War, at Eton College.

Our party was met at Windsor by Mr. L. K. Hall, joint architect, with Mr. Greenslade of the Memorial buildings, and a walk of about ten minutes through the picturesque main street of Eton, which (in spite of one or two vulgar shop fronts) has retained its old-world charm, brought us to the Memorial buildings. The College chapel, the dome over the library—a portion of the Memorial scheme—provide a very happy termination to Eton-street, suggesting that special atmosphere of an historic past and a certain spacious repose and well-ordered scheme of life, apart from the bustle of our modern world, which is so noteworthy a feature of our great English public schools. A short halt was made outside the new buildings to collect stragglers, and we then assembled in the Memorial Hall, where Mr. Hall gave us an address on the genesis and development of the scheme of which the buildings were the architectural expression. After some preliminary remarks, he said :—

"The main purposes for which the Memorial was to be erected were these :—(1) To be an architectural monument; (2) to contain busts and portraits of Old Etonians; (3) to be a place in which to assemble the whole school. We always knew the hall would be put to many other uses, and as far as was consistent with the main purposes we tried to make it convenient for these various requirements. As a matter of fact, up to the present the hall has been used for concerts of all kinds and sizes, for speeches, for lectures, for examinations, and for stage plays; on one occasion a ball was held here, on another a banquet.

The actual requirements mentioned in the printed instructions were :—(1) A hall to seat the whole school; (2) a school library; (3) a small museum; a later instruction being that the hall should be at right angles to the road and the whole of the buildings on one floor.

The area on which it was proposed that this group of buildings should be placed is shown on the small block plan on the wall. It was soon clear that if the scheme was to have a dignified lay-out and its three main parts were to be of sufficient size it would be necessary to very considerably increase the building site.

While plans were being slowly matured and approved by the strong 'committee of taste,' negotiations were also going on with the College and lord of the manor, and the various tenants interested, with a view to making it possible to carry out the scheme when approved.

In the end all obstacles were overcome and building operations were begun in January, 1906. The buildings were formally opened by King Edward VII. on November 18, 1908, and have been in use from that day."

Mr. Hall then gave a few particulars of special features in the building, and also mentioned the difficulties which were encountered from a stream of running sand which crossed the south-eastern corner of the site and necessitated an increased depth for the foundations in this part of the buildings.

The buildings, as they now stand, consist of a vaulted entrance hall, 53 ft. by 25 ft., faced with Portland stone, and divided into ten bays by coupled Ionic columns, placed centrally along the major axis. This hall forms the main entrance to "school hall," its minor axis corresponding with the centre line of the latter, and being marked by the main entrance doors, which are covered with leather and form a very effective feature in strong contrast to the richly-carved and moulded panelling at this end of the hall.

"School hall" is 142 ft. long by 53 ft. wide and 44 ft. high to the crown of the barrel ceiling. The distance from the front of the gallery to the platform is 90 ft., and is divided longitudinally into five bays by coupled Corinthian columns of concrete or steel upon which the roof principals rest.

Large circular-headed windows are placed in each bay, and the wall space below is to be panelled oak. The central bay on the south side, which contains the foundation-stone, is specially treated, the panelling being of a very elaborate design and including some remarkable carved ornament.

On the panels are incised the names of Old Etonians killed in the war, and in the centre (over the foundation-stone) an oak canopied niche enshrines a marble bust of Queen Victoria, presented to the school by Lord Cadogan. A table in front of this centre bay holds a "Roll of Honour," a book containing names of all Old Etonians who served in the war, presented to the school by Mr. E. L. Vaughan.

Of the other finished panels one was given as a pattern by Lord Plymouth, whilst the other was given by subscription as a testimonial to Lord Roberts; a good portrait of the distinguished soldier by Lazlo occupies the centre of this panel.

The panelling and gallery front, placed at the end of school hall, over the entrance hall, gives an effect of extraordinary richness. It is remarkable to note the Gothic feeling displayed in the section of the mouldings, whilst the richness of the carving (kept very flat in section) was reminiscent of Indian work. This gallery was given as a memorial to Jane Evans, whose portrait, a fine, early "Sargent," finds a place on one of the panels, by her boys.

Between the school hall and the library is placed the small classical museum, which is open to the State corridor leading from the main entrance to the platform of the school hall.

It contains a fine monumental stone fireplace, placed on an axial line with the centre panel in the hall described above, and visible from it through the doorway which occupies the central bay on the north side of school hall.

The library is an octagonal hall 54 ft. across, with a dome over the central area which has a diameter of 37 ft. The dome is carried by eight pairs of coupled Ionic columns and behind these columns a gallery encircling the central space is placed, at a height of 10 ft. from the floor level.

The room is lit by eight large circular windows above the gallery, there being no light through the dome. Five smaller windows, placed in the bays beneath, give additional light to the lower part of the library.

The design of the gallery front—which, together with the bookcases, etc., is of Austrian oak, and was executed by J. & A. Ogilvie, of Aberdeen—shows the same careful thought and the sense of fitness which marks the detail throughout; the oak rail and square turned balusters are enriched with a carved panel in the centre of each side of the octagon, representing the device of some famous printing press; it was suggested to the architects, so Mr. Hall informed us, that the richly-carved work would offer an irresistible temptation to the ever-busy penknife of the average schoolboy, to which the architects replied that if something really good, and of beautiful design, was carried out they believed it would be respected. It is interesting to note that this has proved to be a correct assumption, and that the school appreciates and values the good work which has been entrusted to its care.

A striking feature of the library is the large circular table, with eight delicately-designed bronze lamp standards, modelled by Mr. A. Broadbent from the architects' full-size details, and cast by Messrs. Whiteside & Caslake, with bronze shades by the Artificers' Guild.

The proportions of the library are quite excellent, and give an appearance of spaciousness to the interior much in excess of its actual dimensions. The one detail which strikes the eye with something of a jar is the omission of one volute in each pair of Ionic caps, necessitated, of course, by the smallness of the circumference around which they are placed, but we venture to think another solution, or even the abandonment of the Ionic Order, would have been a more satisfactory solution of the problem. Externally, the buildings are probably too well known to require any special description. There is a preponderance of vertical lines over horizontal, which gives a distinctive character to the building as a whole; the colour scheme is restful and pleasing, the subdued tone of the dull plum-coloured bricks harmonising well with the warm greys and whites of the stonework and the darker tones of the lead-covered library dome. The carved enrichments and ornament are well designed and carefully placed, and a word of appreciation must be said for the excellent way in which this work, and the carving in the school hall, has been executed by Mr. A. Broadbent.

A cordial vote of thanks to the architects for allowing us to inspect this interesting building and to Mr. L. K. Hall for coming down personally to explain the Memorial was proposed by Mr. H. Austen Hall, Hon. Secretary of the Architectural Association, and carried by acclamation. A brief visit to chapel and College was found possible before the party returned to London, but pressure on space does not permit of a detailed account of this being included in the report. A MEMBER.

ARCHITECTURAL SOCIETIES.

Association of Aberdeen Architects.

The Association of Aberdeen Architects held their ninth annual meeting in the Northern Arts Club on the 7th inst., Mr. Harbourne Maclennan, President, in the chair. Mr. James Forsyth, Hon. Treasurer, submitted the financial statement, showing that the Association was in a very satisfactory condition. Mr. Harbourne Maclennan then submitted the annual report, which showed that during the past year the membership had increased from seventy-seven to about ninety, and there had been an average attendance at the meetings of nearly forty. The meeting then proceeded to the election of office-bearers for the ensuing year, and the following were appointed :—Hon. President, Mr. Arthur Clyne; President, Mr. Harbourne Maclennan; Vice-President, Mr. Arthur E. Payne; Hon. Secretary, Mr. R. W. Gibbon; Hon. Treasurer, Mr. James Forsyth; Committee: Messrs. J. B. Nicol, J. K. Currie, John G. Marr, A. Cruickshank, J. Allan, and Morrison Hendry.

COMPETITION NEWS.

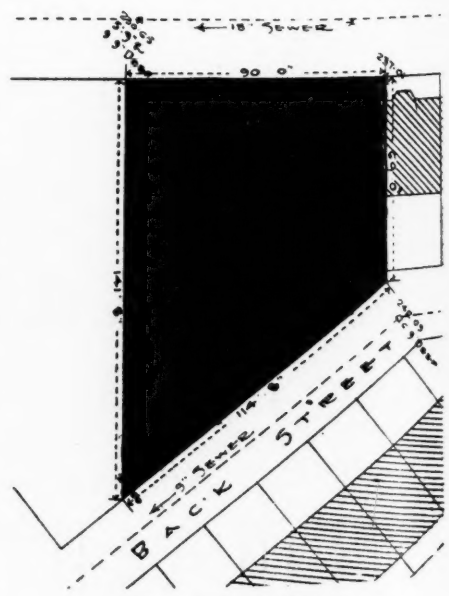
It must be understood that the following paragraph is printed as news, and not as an advertisement; and that while every endeavour is made to ensure accuracy, we cannot be responsible for errors that may occur.

The list of current Competitions is printed on page 466.

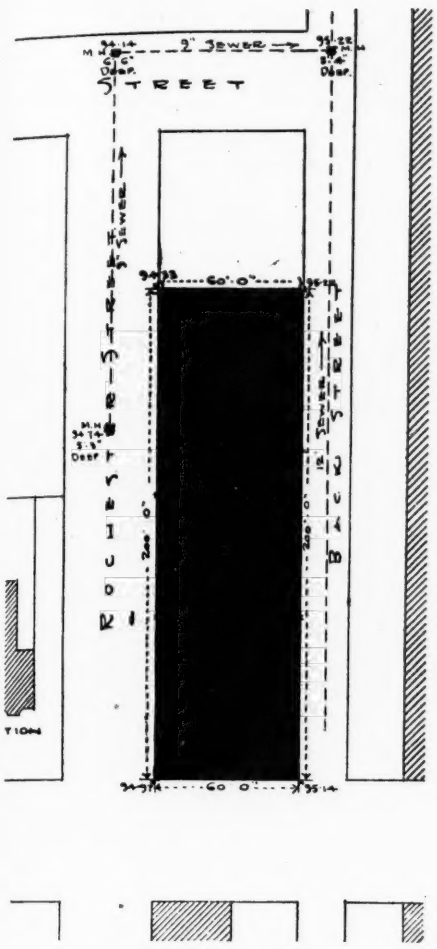
Newcastle-on-Tyne Public Baths at Benwell, Heaton, and Walker.

Competitive designs are invited for these baths, which form the subject for three separate competitions; any competitor can compete for one, two, or all of the baths.

Amount allotted for schemes :—Benwell, £8,000; Walker, £8,000; Heaton, £7,000. Date for sending in, June 14. Premiums, 50, 30, and 20 guineas for each set of baths. Mr. H. W. Wills, F.R.I.B.A., has been appointed as assessor.



Benwell Baths Site.



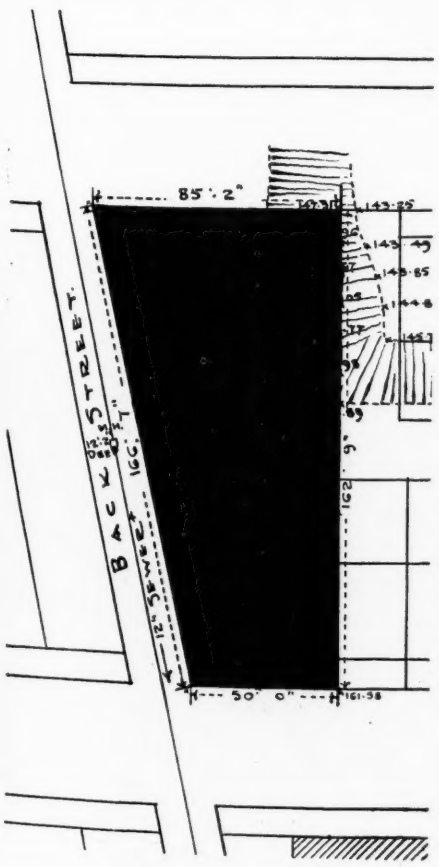
Walker Baths Site.

ACCOMMODATION REQUIRED.

Men's swimming-bath, 75 ft. by 39 ft., with suitable gangways and collapsible dressing-boxes; a club-room to be provided off bath hall; women's ditto, 50 ft. by 20 ft. Provision for spectators to be provided, the exact nature of which is left to competitors.

In the case of Heaton one swimming-bath only is to be provided.

Slipper baths to be provided, with suitable waiting-rooms for both sexes. Twelve slipper baths to be provided at Benwell and Walker, and six at Heaton, two of these in each case to be allotted to women.



Heaton Baths Site.

Establishment laundry to be provided in each case, and the plans to be so arranged that one office only is required.

Boiler-houses to be provided, together with storage tanks for hot and cold water and aeration and filtration plant.

The sizes given are to be taken as a general approximation, and may be varied at competitor's discretion, as long as the accommodation is substantially provided. Special arrangements, such as reinforced concrete, will be required in the case of the Heaton Baths, as the site is near a sand pit.

New York Court House.

The design of Mr. Guy Lowell has been awarded the first place in the competition for the New York Court House. A list of the architects competing was published in the *Builder*, November 15, 1912. The building will be one of the most important in New York, the site having cost some 10,000,000 dollars, and the estimated cost of the building being 30,000,000 dollars.

Rangoon Municipality: New Municipal Office Buildings.

We are informed that Messrs. Ogilvy, Gillanders, & Co. have received a telegram from the Rangoon Municipality advising them of the following awards by the assessors:—First, Mr. L. R. McClumpha, Rangoon; second, Messrs. Warwick & Hall, London, and Messrs. Swales & Pullar, Rangoon; third, Mr. Morris S. R. Adams, London.

CORRESPONDENCE.

The Piranesi Carceri.

SIR,—With reference to your "Note" in the issue of April 4 on the Piranesi Exhibition, it may interest amateurs of Piranesi to know that I bought a complete set of the "Carceri" in the first condition at an auction sale last year. This makes six known sets.

RAMSAY TRAQUAIR.

Scottish Arts Club, Edinburgh.

What is a Bedroom?

SIR,—I was much interested in reading your note on "Fifty Years Ago" in the *Builder* for April 4 and your comment thereon.

I recently built a house for myself in the country, and took care to have hoppers fitted to all the casement windows in the bedrooms so that there might be fresh air and ventilation in all weathers. I am now living in a house, designed, I am told by the owner, by an architect, where the sitting-room windows have hoppers, but there are none in the bedrooms, so that when the weather is bad or threatening, or when the wind is in a certain direction, none can be open throughout the night. I may also say that the larder window is also a casement, so that it could not be left open at night or in bad weather. I remedied this by taking out one or two squares and fitting perforated zinc in place of the glass. P. B.

Recent Progress in Painters' Materials.

A letter from Mr. Arthur Seymour Jennings, in reply to recent correspondence on this subject, is unavoidably held over until next week.

INTERCOMMUNICATION COLUMN.

Church Building.

SIR,—I have been requested by a friend, who is preparing a publication dealing with church building for the populous districts, to furnish certain data, and I should be greatly obliged if any of your readers who have erected churches under £9 per sitting would communicate with me to the address given below. E. H. LINGEN BARKER.

10, *Pembridge-mansions,*
Moscow-road,
Queen's-road, W.

GENERAL NEWS.

Professional Announcement.

Mr. Harry E. King has removed his office to 3, New-court, Lincoln's Inn. Telephone number, 6588 Holborn. The business of Messrs. Fleetwood & Eversden, quantity surveyors, having been taken over by Mr. Harry E. King, the style of the firm in future will be Fleetwood, Eversden, & King.

Royal Institute of British Architects.

We are informed that it will be of assistance to the members of the Art Standing Committee if architects and others who may see this notice would kindly inform the Hon. Secretary of that Committee whenever any matter likely to require its action comes to their knowledge. It sometimes happens that from want of information early enough to render action effective the Committee and the Council of the Institute are compelled to remain passive where timely information might have enabled them to act beneficially.

Mr. Norman Shaw's Clocks.

Messrs. Christie have sold the collection of old English and German clocks, watches (114 in number), and various objects of art formed by the late Mr. R. Norman Shaw, R.A., a total of over £3,000 being realised.

National Museums, France.

M. Henri Marcel, Director of the Bibliothèque Nationale, has been appointed Director of the National Museums of France, *vice* M. Homolle, who was recently appointed Director of the French School at Athens. M. Homolle will, it is stated, return to Paris to succeed M. Marcel as Director of the Bibliothèque Nationale.

Enfield U.D.C. and Disfiguring Advertisements.

The Home Office has recently given its sanction for the enforcement of a code of by-laws by the Metropolitan Police and the Enfield Urban District Council. The by-laws ordain that henceforward no advertisement may be erected so as to be visible from any public park or pleasure promenade, nor will any illuminated advertisement be allowed at a height exceeding 20 ft. from the ground near the several local parks and pleasure grounds. It is enacted, moreover, that no advertisement shall be permitted upon any hoarding, stand, or other erection so placed as to disfigure the natural beauties of the views of Goffs Oak, Northaw and Cuffley, Hilly Fields, Epping Forest, Hadley Woods, Trent and Beech Hill Parks, World's End, Winchmore-hill, Barnet Church from Ferney-hill, and, in fact, of every view and vista in the district.

Property Sales.

Amongst the properties that have recently been placed in the market are the following:—Quebec House, Westerham, the three-gabled Tudor house mentioned by Thackeray in "The Virginians" as the place where Harry Warrington meets Colonel Lambert, which was the home of General Wolfe in his childhood, and to which his father added the stables in 1730; the carved coat-arms of King Henry VII. are above the mantelpiece of the panelled dinner-room.—The freehold premises by the riverside, Putney, with the long slipway, comprising the London Rowing and Leander Boat Clubs and their boat-houses, the New University and the Unity boat-houses, the Vesta Rowing Club house, Sims' boat-house, and "Clasper's" boat-building premises, having a frontage of 400 ft. to the river and held at ground rents amounting to £190 per annum on leases which will expire seven years hence, with reversion to a rental of £750 a year.—The freehold waterside site of some 60,000 ft. super., having a frontage of 270 ft. to Albert-embankment, Lambeth, and a private wet dock, at present covered by Stiff's pottery works.—Amesbury Abbey, Wiltshire, extending over 6,400 acres, and including the mansion, built of Chilmark stone in 1838 after Hopper's designs in the Palladian style.—The Mugdrum Estate, Co. Fife, about 500 acres, lying on the banks of the Tay, near to Newburgh, together with the remains of the Benedictine Abbey of Lindores, which was founded in 1178 by David, Earl of Huntingdon, brother of King William the Lion, upon his return from Palestine, and the "Old Cross" of Mugdrum.—Acrise Park, Kent, built *temp.* Henry VII., and owned *temp.* Edward III. by Sir Stephen Cosenton, from whose descendant it passed by purchase in 1666 to the Papillons, and from them to the Mackinnons.—Quenby Hall, the seat, near Hungarton, Leicestershire, of Lady Henry Grosvenor, which was built, in 1610–20, of brick in diamond pattern with Ketton stone dressings, and with its fine hall, screens, great chamber, and black oaken staircase forms one of the most beautiful Jacobean houses in the kingdom.

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ILLUSTRATIONS.

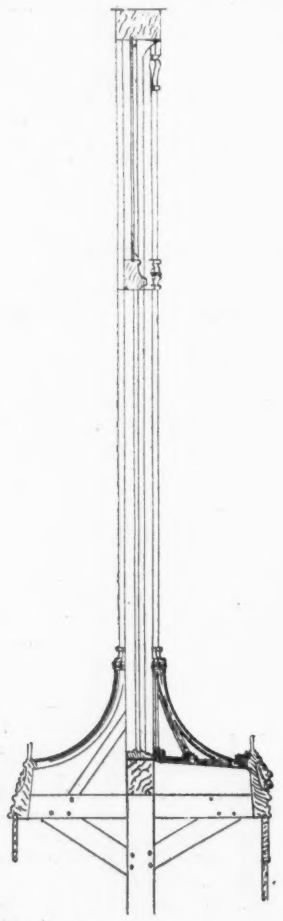
Baroque Architecture.

OUR illustrations of the Bourse, Lille, and Porte De Paris, Lille, are in connection with the eleventh article on "Baroque Architecture," which appears on p. 455.

Screen in St. Mary's Church, Lowgate, Hull.

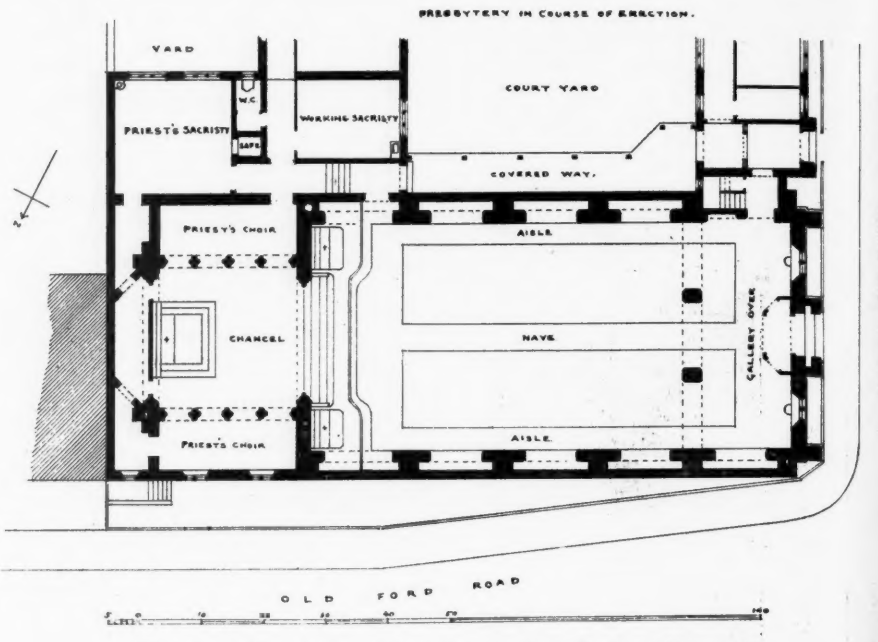
THE chancel screen illustrated in this issue has been given to this church as a memorial to the late King Edward VII., and was dedicated by the Bishop of Hull, October, 1912. The screen is of English oak, stained dark, surmounted by a lofty rood, the figures of which and the cross and stand are all richly illuminated in colour and gold.

The south arcade of the choir was filled at the same time with oak screen work, thus completing the enclosing of the choir, the north screens of which were done a few years ago. The whole of the work has been designed by Mr. Temple Moore, F.R.I.B.A., and the chancel screen, rood, and three south screens



Screen: St. Mary's Church, Lowgate, Hull.

have been executed by Messrs. Gilbert Boulton & Co., sculptors, Cheltenham. The decoration of the rood and figures is by Messrs. Head & Son, of Colchester. The photograph for which our reproduction was made was taken by Messrs. Turner & Drinkwater, Hull.



Church of Our Lady of the Assumption, Bethnal Green, E.

Mr. Edward Goldie, F.R.I.B.A., Architect.

Church of Our Lady of the Assumption, Victoria Park Square, Bethnal Green, E.

THIS church, which was opened last June, stands at the corner formed by Victoria Park Square and Old Ford-road, in the rear of the Bethnal Green Museum. The outside dimensions of the building are 112 ft. in length by 45 ft. in width. It is constructed in London stocks with Bath stone dressings, and roofed with dark green slates.

The total cost of the building, including sacristies and heating chamber under, and including also altars and decoration of same, wrought-iron gilt communion rails, three stained-glass windows, gas fittings, etc., was £8,700.

The general contractors were Messrs. Goddard & Sons, of Farnham and Dorking. The three altars were carried out by Messrs. Earp & Hobbs, of Lambeth, and the stained glass and communion rails by Messrs. Hardman & Powell, of Birmingham. The whole work was designed by and carried out under the supervision of Mr. Edward Goldie, F.R.I.B.A., of Kensington.

MEETINGS.

MONDAY, APRIL 21.

Royal Institute of British Architects.—Mr. F. N. Jackson and Mr. Bernard Dicksee on "Modern Steel Building Construction." 8 p.m.

Royal Society of Arts (*Cantor Lecture*).—Mr. David Sommerville, B.A., M.D., on "Antiseptics and Disinfectants." 8 p.m.

Institute of Sanitary Engineers.—Mr. F. R. Durham on "House Drainage on the Continent." 8 p.m.

Liverpool Architectural Society.—Annual general meeting.

The Institution of Civil Engineers.—Mr. A. T. Walmisley, M.Inst.C.E., on "Production of Steel Sections and their Application in Engineering Structures." 8 p.m.

TUESDAY, APRIL 22.

The Society of Architects.—Annual dinner, at the Trocadero Restaurant. 6.30 p.m.

Royal Sanitary Institute.—Mr. P. Boobbyer on "Common Diseases." 7 p.m.

The Institution of Civil Engineers.—Mr. Murdoch Macdonald on "Assuan Dam: Protection of Downstream Rock Surface, and Thickening and Heightening." 8 p.m.

WEDNESDAY, APRIL 23.

Royal Society of Arts.—Mr. H. V. Lanchester, F.R.I.B.A., on "The Design and Architectural Treatment of Shops." 8 p.m.

Edinburgh Architectural Association.—Annual business meeting. 8 p.m.

Nottingham Architectural Society.—Annual meeting.

THURSDAY, APRIL 24.

The Society of Architects.—Mr. F. E. Howard on "Devon Parish Churches of the Fifteenth Century." 8 p.m.

The Concrete Institute.—Discussion on reports of the Science Standing Committee on—(1) "A Standard Notation for Structural Engineering Calculations." (2) "A Standard Specification for Reinforced Concrete Work." (3) "Standard Connections and Joints in Reinforced Concrete." 7.30 p.m.

MAGAZINES AND REVIEWS.

THE *Burlington Magazine* for April gives an illustrated article on S. Cuthbert's Stole and Maniple at Durham, by Mr. G. Baldwin Brown and Mrs. Archibald Christie; a further series of notes on Italian medals, XIV., by Mr. G. F. Hill; an article on Rembrandt's earlier etching of Jan Cornelis, by Mr. Arthur M. Hind; and on the Venetian School in the Grand Ducal collection at Oldenburg, by Mr. Tancred Borenius follow, illustrated by some interesting examples of Bellini Mansueti, Previtali, and Cariani. Mr. Oskar Fischel gives an article on "A Dürer Subject in the Prince Consort's Collection of Photographs after Raphael." Other articles deal with "Pictures in the Wallace Collection"; the Bewcastle and Ruthwell Crosses, by Mr. Baldwin Brown and Mr. Lethaby and Mr. D. F. Martin; and Oriental Painting, Art in France, and other subjects. As usual, the number is full of interest.

The April number of *Moderne Bauformen* contains some interesting illustrations of the rebuilt Town Hall in Rudolstadt, i. Th. The problem was to add to the old building, making use of a site between this and a modern hotel—the latter, by the way, not one of the weird type of erections. The solution is a very happy one, with a bay connecting the old work to a new tower. The external work is designed with a true feeling of the mediæval German style, combined with sufficient individualism to keep it alive. The pages illustrating the internal work, including the furniture, are rather a disappointment after the previous ones. Apparently the architects, Messrs. Veil & Herms, of Munich, did not consider it necessary or advisable to pay very much attention to the atmosphere of the old work, with which we do not agree. It is another of those cases in which we cannot understand the present-day tendency of German artists to break away from old traditions at all cost. Surely history shows that the best results have always been based on the foundations of former masters of work. The same number contains illustrations of moden German furniture designed by Emil Bercher, some of it of high quality. Mr. Voysey's design of Messrs. Atkinson's premises in Bond-street and of a cottage in Kendal are also shown.

The *Connoisseur* for April forms an interesting number, which we intend to refer to in our next week's issue, together with *Harper's Magazine*, which is a varied and interesting number.

FIFTY YEARS AGO.

From the *Builder* of April 18, 1863.

JOINERS' STRIKE.—A number of the journeymen joiners in Dumfries are at present out on strike. It appears that the men have demanded from their employers that in future they drop working on Saturday afternoon at two o'clock, but that no reduction is to be made in their wages, the general rate at present being 21s. per week.

*** We believe the joiner of to-day has no reason to look on the past with regret.—ED.

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VICTORIA PARK SQUARE.

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